Faculty of Science and Technology

Framework Specification

Creative Technology Framework

BSc (Hons) Music & Audio Technology
BSc (Hons) Music & Sound Production Technology
BSc (Hons) Media Technology (closure)
BSc (Hons) Games Technology (closure)
BSc (Hons) Games Programming (closure)
MSc Digital Music & Audio Production
MSc Computer Games Technology

September 2017

v5.3-0917
Bournemouth University undertakes to encourage the recognition, protection and exploitation of intellectual property rights generated by participants in this programme, to the benefit, as appropriate, of students, staff, industrial/other third parties/partners and the university.
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## 1 BASIC FRAMEWORK / PROGRAMME DATA

<table>
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<tr>
<th>Originating institution(s)</th>
<th>Bournemouth University</th>
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| Award(s) and title(s)     | BSc (Hons) Music & Audio Technology  
BSc (Hons) Music & Sound Production Technology  
BSc (Hons) Games Programming  
BSc (Hons) Games Technology  
* (as well as DipHE or CertHE in Music Technology)  
** (as well as DipHE or CertHE in Games Technology)  
MSc Digital Music & Audio Production  
MSc Computer Games Technology  
*** (as well as PGDip and PGCert) |
| UCAS Programme Code(s)    | BSc (Hons) Music & Audio Technology – J932  
BSc (Hons) Games Technology – G601 (closed April 2017)  
BSc (Hons) Music & Sound Production Technology – W309  
BSc (Hons) Games Programming – I610 (closed April 2017)  
MSc Digital Music & Audio Production  
MSc Computer Games Technology |
| External reference points(s) | • Subject benchmark statements - Art and Design from the Quality Assurance Agency (2008)  
• Subject benchmark statements - Engineering from the Quality Assurance Agency (2006)  
• Subject benchmark statements - Music from the Quality Assurance Agency (2008)  
• Subject benchmark statements – Communication, media, film and cultural studies from the Quality Assurance Agency (2008)  
• Subject benchmark statements – General business and management from the Quality Assurance Agency (2007)  
• Masters level benchmark statements – Engineering (MEng) from the Quality Assurance Agency (2006)  
• The framework for higher education qualifications in England, Wales and Northern Ireland (FHEQ) from the Quality Assurance Agency (2nd 2008) |
| Professional, Statutory and/or Regulatory Body links | JAMES (for BSc (Hons) Music and Audio Technology)  
TIGA (BSc Games Technology) |
| Place(s) of delivery      | Bournemouth University, Faculty of Science and Technology |
| Mode(s) of delivery       | Full-time / Full-time sandwich |
Credit structure

- Level C/4 120 (60)
- Level I/5 120 (60)
- Level H/6 120 (60)
- Level M/7 180 (90)

Substantially Taught Mode: 120 credits taught units and 60 credits project
Duration

**UG:**
- Full-time 3 years
- Full-time sandwich 4 years

**PG:**
- Full-time 1 year
- Part-time 2 years

(min and max periods are covered in the regulations)

Date of original approval(s)

Date of first intake
September 2016 (for the revised version of the framework)

Expected Start Dates
September

Student Numbers
300 undergraduate and 16 postgraduate (across the Framework)

Placements
BSc (Hons) Sandwich Award - minimum 30-weeks
BSc (Hons) Full Award – optional 8 week short placement

Partner institution(s) and model(s)
Bournemouth and Poole College (top-up from Foundation to Level I for the Games degrees and Level H for the Music degrees)
Bridgwater College (top-up from Foundation to Level H for Music degrees)

Date and version number of this Programme Specification
**September 2017 v5.3-0917**

**June 2013**
**E1213188**: Approval of Articulation Arrangement with Bournemouth University International College (Kaplan) for Level C entry.
**E1213194**: Approval of Recognition Agreement with Bournemouth Business School International (BBSI) – recognition without advanced standing.

Both E1213188 and E1213194 are for the following courses:
BSc (Hons) Games Programming
BSc (Hons) Games Technology
BSc (Hons) Music and Audio Technology
BSc (Hons) Music and Sound Production Technology

**August 2013**
**DEC 1213 14**: Updated Industrial/ Freelance Placement unit included in Unit Specification

**October 2013**
**DEC1314 01**: Updated Internal Progression arrangements from FdSc’s at BPC and Bridgwater College to Level H BSc (Hons) MAT and BSc (Hons) Games Technology

**April 2015 SciTech 141509** Music and Sound Production. Level 6 Advanced Recording and Production unit weighting changed to 100% coursework
July 2015  
Scitech 1415 12 Change to ILOs for the Commercial Business Environment level 5 unit  
Scitech 1415 13 New unit Games Content and Asset Creation for Games Technology. Modification to Games Techniques 2 unit  
Scitech 1415 14 Change to ILOs for Group Project level 5 unit  
Scitech 1415 15 MAT and MSPT: Introduction of new level 4 unit Software Programming for Digital Media, replacing Media Devices and Networks unit  
Scitech 1415 19 Introduction of 8 week placement  
FST 1516 09 Change of unit title Studio Techniques 2 to Recording and Acoustics. Approved 20.1.16.  
FST 1516 10 Change of one core unit, update to ILO for one unit. Approved 20.1.16. Previously v2.1PG/4.6UG  
FST 1516 12 New unit to replace Group Project with Creative Practices for the Music programmes only. Approved 9.3.16. Previously v4.6  
FST 1617 01/02, approved 16/09/16. Previously v5.0-0916  
BU1617 01, approved 24/02/2016. Previously v5.1-0916  
P161702, approved 21/06/2017. Previously v5.2-0917
2 AIMS OF THE DOCUMENT

The aims of the document are to:

- define the structure of four undergraduate pathways and two Masters pathways within the Creative Technology framework,
- define the nature of the framework, the pathways and the names of the corresponding awards,
- specify all the pathways outcomes and level outcomes,
- make or give reference to regulations governing all the pathways in the framework.

3 PROGRESSION ROUTES

These are outlined in detail in the Programme Diagrams (Section 9) and also Admission Regulations (Section 10).

4 ACADEMIC AND PROFESSIONAL CONTEXTS

The Creative Technology Framework has been designed to meet the needs of students who have the desire to work in the creative industries. They may have a more technical background or (for one of the four undergraduate programmes) a more creative one. To this end, the Framework will offer separate pathways (programmes) to give a specific application focus but will allow commonality to be exploited between the two main routes (Games and Music) as well as the individual pathways.

These pathways will be operating within the Creative Technology framework with a common first year for the different two routes (Games and Music) and some shared units of study in the first, second and final years.

The pathways are technically oriented. Although the creative aspects of music composition and the presentation of entertainment material is very important (particularly for the Music and Sound Production Technology degree), the emphasis in the Music and Audio Technology, Games Technology and Games Programming pathways will be on the technical aspects of music/audio generation, recording and integration of components of media systems plus the development, implementation and deployment of computer games. It is expected that the applicants for these pathways have an interest in music, games and the related media components involved but it is not necessary for them to be musicians or artists.

Creative Technology is taken to be an integration of a multi-faceted combination of disciplines which fuses three previously distinct but increasingly intertwined areas:
1) Content creation – the creative aspects of topics such as creative media, music, audio, video, computer and video game assets, films and recorded speech. The Creative Technology framework seeks to emphasise the technical principles and practices involved in the act of creation of musical, audio, computer/video game-related and visual content rather than the study of associated resultant ‘created artefacts’ themselves. For example, students primarily acquire the scientific, intellectual, technical and practical skills needed to capture a sound or musical recording and process it to construct a multimedia presentation. Equally, students acquire the same skills to develop, from the ground up, a contemporary computer/video game (or individual parts of it).

2) Technology design, implementation and application – innovative use of topics traditionally characterised as branches of engineering, such as electronics or computing in the manipulation of sound, animation, video and media content (such as a variety of computer and video game assets). This will include the specification, design, implementation and testing of technology for a creative environment. To do this, it is vital that a full appreciation of the creative process is understood. For example, audio and video digitisation, effects processing, digital image and graphics manipulation, computer graphics programming, games programming and others.

3) Innovative and entrepreneurial approaches as well as intellectual property and copyright laws and business ethics. These areas also inevitably impact on the domain of music, modern media and gaming technologies since the application of technological advances to creative processes is already providing opportunities to exploit novel business models. Moreover, these approaches provide an increased understanding of the overall global economy to the framework graduates, thus preparing them for competing in an international job market as well as a domestic one, a hugely crucial and advantageous skill which they absolutely need to be in possession of.

The convergence of creative, technological and organisational areas is likely to continue into the foreseeable future and beyond. This framework seeks to emphasise the study of technological advances that enable creativity, rather than the skills of music or game design theory itself. Innovations in both hardware and software areas of recording, editing, manipulation and storage/distribution of creative digital media (including games) will be examined and explored. In addition, complex technologies will be designed, implemented and applied to many aspects of music, sound, media, animation, games development and video processing. These technologies will open up innovative creative opportunities to artists, game developers and creative practitioners unheard of in a previous era.

The aforementioned technical advances promise to continue to open up opportunities for technical personnel to find fruitful careers and opportunities to exploit their technical and creative subject knowledge and intellectual skills. Study of the area involves students working in an invaluable, exciting and demanding up-to-date fusion of contexts requiring subject knowledge, intellectual and practical skills from multiple disciplines. Graduates of this
framework will be able to demonstrate learning of relevant disciplines defined in the following subject benchmarks:

- Communication, Media, Film and Cultural Studies
- Computing
- Engineering
- General Business and Management
- Music

The design philosophy requires the students to have subject knowledge, sound intellectual skills, practical skills as well as transferable skills from a distinctive range of these component disciplines. This will ensure that outcomes are sufficiently rigorous and distinctive to secure enhanced graduate capability and good graduate employability. The framework is founded on the firm principles and skills of one common level of compulsory ‘core learning’ (shared between the Games and Music pathways but different between routes) which are acquired in the first year of study (Level C). The pathway specific units within the two route structures are evident in the second year (Level I) and final year (Level H).

Once the outcomes of Level I are achieved, the student continues with the chosen pathway to Level H. Main learning in Level H comprises of three 20-credit taught units (total 60 credits), with 20 credits different between the two music pathways and 40 credits between the games pathways in the framework. Furthermore, an extended 60-credit (individual) project, the title of which must be closely related to the student’s choice of pathway, makes up the other half of the 120-credit points in Level H. The student’s choice serves to broaden and/or deepen learning into general Creative Technology and one of a chosen specialist area (i.e. Music and Audio Technology, Music and Sound Production Technology, Games Technology or Games Programming). Thus, the student’s own well-informed named pathway choice selects both the nature of the main learning, the area of the (individual) project and the name of their final degree award.

This framework offers four undergraduate programmes and also two Masters Programmes:

- BSc (Hons) Music & Audio Technology
- BSc (Hons) Music & Sound Production Technology
- BSc (Hons) Games Technology
- BSc (Hons) Games Programming
- MSc Digital Music & Audio Production
- MSc Computer Games Technology

4.1 Professional Accreditation

The team has gained accreditation from the JAMES (Joint Audio Media Education Services) in the summer of 2012 for the BSc (Hons) Music and
Audio Technology. This was possible once the first final year cohort graduated.

While industry feedback indicates that the JAMES accreditation is not essential for graduate employment, JAMES is a combined service from the APRS (Association of Professional Recording Services) and MPG (Motion Pictures Guild) and competitive programmes in UWE and Leeds Met have been accredited by JAMES.

According to the statement found on the JAMES website (http://www.jamesonline.org.uk/heaccred.html) HE accreditation offered by them will provide the following benefits to courses obtaining it;

- Assures potential students of the value of the course
- Assists employers in judging which courses are relevant for recruitment
- Allows the industry to focus support for education and training, including CPD
- Enhances courses by enabling direct access to industry professionals

The team has obtained membership of TIGA (the trade association body for UK game developers) for the Games Technology course and 2012-13 will be the third year of it.

In addition to this, the Games Technology degree is now eligible, having had one graduating cohort of students, for the Creative Skillset accreditation which will be sought soon.

5 AIMS OF THE PROGRAMMES

The following section describes the aims of the four undergraduate and two postgraduate programmes in the Creative Technology framework.

5.1 BSc (Hons) Music & Audio Technology (MAT)

The MAT pathway aims:

- To deliver a balanced, broad education to the level and standard of an Honours degree, in the area of Music, Audio Technology and Business Innovation.
- To provide students with a set of modern professional engineering and design skills.
- To provide students with a working knowledge and understanding of business related issues, encompassing finance, development, marketing, and legal issues in the Music Industry.
- To develop knowledge and understanding of advanced simulation and system modelling techniques used in the Music Industry.
• To provide students with a full knowledge and understanding of the existing and emerging market constraints and opportunities.

This pathway aims to develop expert technologists who have a strong understanding of the underlying technology used in the diverse field of music technology. On graduating students will have the ability to design and develop appropriate tools and techniques to support the creation, recording, editing, manipulation and post-processing of music to the level of a professional product. The emphasis of the course will be on the technologies underpinning the creation of music and audio but some areas will be contextualised through creative output.

The course will focus on the theoretical and practical aspects of studio techniques, together with units in programming and signal processing. Advances in music and audio technology will be incorporated into the course with specific focus on the technologies used in the design of novel music and audio systems. This will include the creation of computer software for the manipulation of audio content. Students will also develop a strong sense of industry awareness and the ability to market themselves and monetise their output in a competitive field. Students will leave the course with a portfolio of work in different areas that represents the contemporary and divergent field of music and audio technology.

5.2 BSc (Hons) Music and Sound Production Technology (MSPT)

The MSPT pathway aims:

• To deliver a balanced, broad education to the level and standard of an Honours degree, in the area of Music, Sound Production Technology and Business Innovation.
• To provide students with a set of modern professional production and design skills.
• To provide students with a working knowledge and understanding of business related issues, encompassing finance, development, marketing, and legal issues in the Music Industry.
• To develop knowledge and understanding of advanced creation and production techniques as used within the Music Industry.
• To provide students with a full knowledge and understanding of the existing and emerging market constraints and opportunities.

This pathway will focus on developing skills in music production, recording and sound design through creative output. This creative focus will be underpinned by the development of a thorough understanding of the technologies that underpin the recording and production processes at a
professional level. This understanding will help inform the creative decisions made.

This pathway aims to produce creators of content that have a thorough technical understanding of the technology underpinning their work to further their creative possibilities. Advances in music and audio technology will be incorporated into the course with specific focus on the creative power of working with innovative research-led approaches to manipulating music and sound. Students will also develop a strong sense of industry awareness and the ability to market themselves and monetise their output in a competitive field. Students will leave the course with a portfolio of work in different areas that represents the contemporary and divergent field of music and sound production technology.

5.3 BSc (Hons) Games Technology (GT)

The GT pathway aims:

- To provide students with a course of study to the standard of an Honours degree in the area of Games Technology and Business Innovation
- To provide students with a set of modern professional engineering and design skills to develop professional computer games
- To provide students with a working knowledge and understanding of business related issues, encompassing finance, development, marketing and legal issues in the Games Industry
- To develop knowledge and understanding of advanced simulation and system modelling techniques used for the development of computer games
- To provide students with a full knowledge and understanding of the existing and emerging market constraints and opportunities

In this pathway, students will develop knowledge and skills in the technological aspects of games development. This will enable them to design and develop appropriate tools and techniques to integrate music, audio, graphics and animation into a games engine. This will be for multiple platforms, including the console-based and mobile markets. Students will gain a broad understanding of video and audio, and more in-depth understanding of 3D modelling, graphics, animation, game level design and games programming. Students will learn how these different types of media can be composited together, as required for today’s multi-faceted games. They will also gain a full appreciation of the creative process and will be able to contribute to all aspects of game design including design methods, narrative elements and gameplay.

Students will also develop a strong sense of industry awareness and the ability to market themselves and monetise their output in a competitive field such as the games industry. Students will leave the course with a portfolio of
work in different areas of games technology that represents the contemporary and divergent field of entertainment computing.

5.4 BSc (Hons) Games Programming (GP)

The GP pathway aims:

- To provide students with a course of study to the standard of an Honours degree in the area of Games Programming and Business Innovation
- To provide students with a set of modern professional engineering and design skills to program, for a variety of settings, roles and platforms on and for contemporary game titles
- To provide students with a working knowledge and understanding of business related issues, encompassing finance, development, marketing and legal issues in the Games Industry
- To develop knowledge and understanding of advanced simulation and system modelling techniques used for the programming processes of computer and video games
- To provide students with a full knowledge and understanding of the existing and emerging market constraints and opportunities

In this pathway, students will develop knowledge and skills in the technological aspects of games programming. Students on this course will acquire skills closely related to being proficient programmers with a context-specific knowledge of mathematics, physics, artificial intelligence and a clear understanding of how these techniques are employed and are related to the modern games industry. Their application of these techniques will extend to multiple platforms, including the console-based and mobile markets. They will also gain an appreciation of some of the more content production related processes such as level design and 3D modelling enabling them to work in teams with non-technical game developers and understand the role and importance of a programmer within the contemporary game production pipeline.

Students will also develop a strong sense of industry awareness and the ability to market themselves and monetise their output in a competitive field such as the games industry. Students will leave the course with a portfolio of work in predominantly the specialist area of games programming.

5.5 MSc Digital Music & Audio Production

The primary aim of this programme is the development of Masters Level graduates who:

- Have the ability utilise music technology for the creation and production of digital music and the ability to assess any limitations of that production
● Have comprehensive knowledge and understanding of music and audio technology
● Are fully aware of the enterprise and business driven aspects of the music industry
● Have the ability and confidence to apply their knowledge and skills to specific problems individually or in a group and also communicate effectively with both those working in the field of digital music and audio production design engineering and with the wider public
● Are fully conversant with contemporary information resources and use them effectively and efficiently

The MSc in Digital Music & Audio Production provides an in-depth knowledge in key areas of music technology and production. It prepares students for employment in sectors such as internet distribution, music production and post-production, software engineering for music, composition for new media and related disciplines. The programme takes into account the radical changes in the music industry from an offline model (CD sales and radio) to an online de-materialized model bringing new challenges and opportunities. The music and audio industries are taking new directions: content is increasingly created and shared collaboratively through online mediums; artists are not distributing CDs anymore but rather self-publish themselves over personal websites. Music is more than ever present everywhere whilst generating revenues from it is increasingly challenging. The above criteria are leading to a complete re-questioning and re-structuring of the music and audio industries, which is the core research question of this programme.

This programme offers a mix of practice-based research through the use of state of the art audio production facilities and taught classes by academics and industry experts. The programme offers six taught units and is complemented by an independent project, which can be a dissertation, a portfolio of work, a software application or a combination of deliverables.

5.6 MSc Computer Games Technology

The primary aim of this programme is the development of Masters Level graduates who:

● Have the ability to utilise high level programming languages for the creation, implementation and production of computer games
● Have comprehensive knowledge and understanding of computer games technology
● Are fully aware of the enterprise and business driven aspects of the computer games industry
● Have the ability and confidence to apply their knowledge and skills to specific problems individually or in a group and also communicate effectively with both those working in the field of computer games and audio production
• Are fully conversant with contemporary information resources and use them effectively and efficiently

The MSc in Computer Games Technology aims to provide the student with the ability to plan, implement and produce computer games using modern methods and tools. In recent years there have been significant developments in the philosophies, methods and tools for planning, implementing and producing computer games. This programme is designed to provide industry with personnel who understand the technical tools and techniques required by the gaming industry.

This MSc provides an in-depth knowledge in key areas of games technology and production. It prepares students for employment in sectors such as games programming, game engine design, game design and game management and production. The programme takes into account the radical changes in the gaming industry such as the burgeoning mobile gaming market. This programme offers a mix of practice-based research through the use of state of the art game production facilities and taught classes by academics and industry experts. The programme offers six taught units and an independent project, which can be a dissertation, a portfolio of work, a software application or a combination of deliverables.

INTENDED LEARNING OUTCOMES

5.7 BSc (Hons) Music & Audio Technology

For a mapping of the Program Outcomes/Level Outcomes to Unit ILOs see Appendix 1.

5.7.1 Programme Outcomes - Level H

This programme provides opportunities for students to develop and demonstrate knowledge and understanding, and skills, as follows:

A  Subject knowledge and understanding

A1. Principles and practices of creative music and audio technology systems

A2. Techniques for music and audio synthesis and processing

A3. Design and construction of computer programmes for mobile devices within a creative content

A4. Design and integration of music creation, recording, performance, duplication and delivery systems, for example in a studio environment
A5. Apply advanced technology for studio recording, editing, manipulation and production

A6. Business models, marketing, legal, ethics and professional media technology requirements

B **Intellectual skills**

B1. Creatively apply analysis, design, development and integration modelling concepts for the production of music and audio technology systems

B2. Elicit, organise and conceptualise requirements for music and audio technology systems by evaluation of context specific requirements

B3. Design infrastructures by selecting music and audio technology components to complete fully integrated systems

B4. Analyse and critically interpret experimental results to optimise performance

B5. Identify common aims and objectives to integrate music and audio processes with technical multimedia solutions

B6. Apply project management judgements taking account of aesthetics, ethics, sustainability, human factors, usability, reliability, costs, benefits, and risks.

C **Subject specific / practical skills**

C1. Create professional high performance music and audio systems

C2. Apply rational design methods to design and build sound technology systems

C3. Apply appropriate technology to implement a music and/or audio production

C4. Set up and optimise state of the art music and audio systems

C5. Build music and audio software systems appropriate to specified organisational requirements

C6. Apply the principles of project management to develop solutions systematically

D **Transferable skills**
D1. Structure, organise and use ideas creatively to communicate orally and in writing

D2. Plan, conduct and report on work within a set timeframe

D3. Work effectively, efficiently and ethically individually and in groups

D4. Learn collectively and independently with a critical viewpoint in a variety of familiar and unfamiliar organisational and technical situations

D5. Influence others creatively and constructively in seeking optimum solutions

D6. Work in a sustainable context while appreciating global perspectives and challenges

**Learning and Teaching Methods and Strategies**

Outcomes A1-A6 is acquired mainly through a combination of lectures, small group laboratories, studios, seminar classes, and the individual project. As the pathway progresses, students elicit music and audio technical needs (A1) and their recording needs (A5) for different aesthetic contexts (A3, A4) and organisational needs (A6). They develop, evaluate and integrate high performance music and audio systems (A3-5).

Students select, evaluate and integrate music and audio technology systems to efficiently manipulate and distribute created artefacts (A2) with an understanding of novel business models (A6). The importance of directed reading is emphasised to students throughout Levels C and I. At Level H, emphasis shifts towards the importance of independent research and learning through extensive reading to consolidate and deepen knowledge and understanding (A1-6).

Creativity, analysis design and development skills (B1-3) are developed through lectures, weekly small group exercises and throughout the individual Level H project. Research, experimental and design skills (B1-4) are developed through coursework activities, laboratory experiments and the level H project. Skills in analysis, critical interpretation and optimisation of experimental results are developed through laboratory experimentation, case studies and the individual project (B4).

As knowledge and skills develop, better opportunities arise to identify common aims and objectives to integrate technological and aesthetic multimedia solutions and to apply appropriate professional and ethical judgements individually and in groups (B5, 6). A keystone of intellectual skill development is the detailed feedback given to students on all their coursework in the form of formative assessment. Students are strongly encouraged to reflect on their results and evaluate their own work via the PDP website and student profiling arrangements or independently (B1-6).
Skills (C1-4) are developed throughout the pathway mainly in small groups in simulated business situations. Practical application of project management principles and the ability to work in groups (C5, 6) are learned through the level.

Communication skills (D1) are developed using case studies and presentations as well as written reports. Structuring and planning work (D2) is developed right from the start of the pathway and throughout. Creativity, reflection and critical thinking in individual and group learning is sought throughout the pathway to develop lifelong learners in the profession for all students and given special emphasis at Level H, for example in the individual project (D3-6).

Assessment

Assessment of subject knowledge and understanding is through written examination, individual and group reports, project builds and presentations for A1-6.

For the pathway as a whole, assessment of intellectual skills is mainly through unseen examination (B1-4), in-class tests (B5), essays (B1-4), individual reports (B1-6), and group reports (B5 & 6).

For the pathway as a whole the practical skills are assessed through individual reports and group reports (C1-6) as well as demonstrations, presentations and viva voce examinations.

For the pathway as a whole, the transferable skills (D1-6) are assessed through written examination (D1), case study examination and essays (D2), individual reports (D1-4) and group reports (D2-6).

5.7.2 Level Outcomes – Level I

A Subject knowledge and understanding

A1. Principles of music and audio technology

A2. Principles and practices of music and audio creation, processing and recording

A3. Tools and techniques for creation and recording of music and audio

A4. Software development methodologies and syntax for a programming language

A5. Principles of market analysis and legal processes

A6. Project management techniques including teamwork, ethics and professionalism
B Intellectual skills

B1. Choose between methods and tools for creating and recording music and audio

B2. Design software programs to a given specification

B3. Analyse the requirement specification for creation of music and audio

B4. Evaluate music and audio tools for the design of a product

B5. Evaluate MIDI equipment, sequencing software, main tools and techniques for producing music and audio

B6. Reflect on legal issues and project management techniques in well-known situations

C Subject specific / practical skills

C1. Apply appropriate tools and techniques for creation and recording of music and audio

C2. Use suitable approaches for the design and coding software programs from first principles

C3. Integrate and synchronise MIDI equipment for a recording environment

C4. Apply design methods, tools and techniques to integrate music and audio

C5. Apply simple project management techniques for the development of media components and their integration

C6. Ethically make a contribution as member of a team

D Transferable skills

D1. Organise and use ideas to communicate orally and in writing

D2. Plan, conduct and report on work within a set time

D3. Work ethically individually and in groups

D4. Learn independently in contexts of intermediate complexity

D5. Work in groups to seek creative solutions to problems

D6. Understand issues of sustainability, regeneration and global challenges
Learning and Teaching Methods and Strategies

Students acquire outcomes A1-4 mainly through a combination of lectures, small group laboratories and seminars. As the pathway progresses they have the opportunity to learn and apply tools and techniques for recording and processing audio and video to meet the specification of finish products. Additional knowledge is acquired by individual and group work presented within the context of the simulated situation of a substantial project build of medium scale music and audio solutions (A5). The emphasis of the work for each group member is the main learning topics of their choice of final year named pathway (A1-6).

The evaluation and Analysis skills (B1-5) are developed through lectures, weekly small group discussions, and exercises in computer laboratories and audio studios. The requirement analysis for product development and distributed media systems will be developed through case studies, coursework and group projects (B3 and B5). The individual component of the group project must relate directly to a topic area of the student’s named pathway. The group project activities also provide opportunity to reflect on project management techniques (B6).

Skills (C1-6) are developed mainly in small group laboratories, audio and recording studios and seminars. Students will develop, test and deploy software for music and audio applications (C1). Appropriate tools and techniques will be applied for processing of audio, music, synchronisation and integration during the studio sessions (C1-4). Group work and ethical professional practices (C5 &6) are developed in individual coursework and the integrating group project, which must relate to the students named pathway.

The importance of students accruing skills of learning independently are stressed throughout the level (D4). Communication skills are developed mainly through small group seminars and group work (D1). Skills of organising, planning, project management and global perspectives (D1-6) are developed mainly through lectures and small group laboratories and seminars in most units during the level.

Assessment

At this level, assessment of subject knowledge is through written examination and case study examination (A1-4), individual and group reports (A5 & 6).

Assessment is through practical work and written examination (B1-5), individual reports (B1-6) and group reports (B6).

Assessment of practical skills is through individual reports, demonstrations of finish product and presentations (C1-6), individual group reports (C5 & 6), written and case study examination (C3 & 4).
Case studies and coursework assignments, for example AV presentations are used to assess communication skills (D1). The skills of planning, carrying out and reporting on work individually and in groups are developed through all units with coursework assignments, individual and group reports (D2-5). Global perspectives and a regard for sustainability and regeneration are assessed throughout the units (D6).

5.7.3  Level Outcomes – Level C

A  Subject knowledge and understanding

A1. Principles of music and audio representation
A2. Principles of music and audio recording and post-processing
A3. Principles of computer systems and networks requirements for distributed media and entertainment systems
A4. Composition methodologies for the development of music and sound material
A5. Principles of music and sound production
A6. Personal development, business models, marketing, ethical, legal, professional, sustainability, regeneration and global context of 1-5

B  Intellectual skills

B1. Understanding of music and audio signals and representation, creation, recording technologies, techniques and processes
B2. Familiarity with production tools and techniques in relation to musical genre
B3. Use the main concepts and functions of computer architectures and network components
B4. Reflection and analysis of different approaches to a compositional brief
B5. Take appropriate approaches in creative product design
B6. Report writing, presentation, working in groups and project management tools and techniques

C  Subject specific / practical skills

C1. Apply tools and techniques to create and record music and audio
C2. Apply relevant tools to process music and audio
C3. Configure computers and build basic computer networks

C4. Produce music and sound within specified constraints.

C5. Manage time and effort, achieve deadlines and decide priorities

C6. Contribute efficiently and effectively to individual and group work

D Transferable skills

D1. Communicate orally and in writing using appropriate structures, facts and events

D2. Conduct and report within a set time and context on work assigned

D3. Work independently with appreciation of ethical actions

D4. Find facts to describe and explain simple phenomena and artefacts

D5. Work efficiently and effectively in small groups within limited and set contexts

D6. Appreciate that sustainable regenerative design solutions require ethical and global perspectives

Learning and Teaching Methods and Strategies

The outcomes are acquired by students mainly through a combination of lectures and small group classes such as laboratories, studios and seminars (A1-5) and tutorial support sessions. Additional teaching occurs in the context of well-defined business simulations and group projects to explore the personal development, ethical and other issues (A6).

Understanding of data representation and post-processing (B1-2), computer architecture and system design life cycle (B3 & 5) are developed through lectures and small group laboratories, studios, individual and group reports and essays. Reflection and analysis skills are developed in small group studio sessions (B4). Personal development and project management skills are developed in a combination of lectures and seminars as well as group projects (B6).

The ability to provide practical solutions to music and audio, video recording and processing, computer configuration and basic network set-up are learned through lectures and workshop sessions. Workshop activities include working in laboratories and studios on practical program development, and practical network construction (C1-4).

The skill of developing music and sound within specific constraints is acquired through small group studio work. (C4). The skill of managing students’ time
and working efficiently in groups is developed in most units especially in group projects and the simulated business activities (C5 &6).

Communication skills are developed using case studies, writing coursework reports and teaching in small groups (D1). The importance of organising, structuring and working independently are taught throughout the level but mainly in the personal development component of the level (D1-4). The practical skill of ethical action and global perspectives are taught by means of lectures and small group seminars (D3, 5 & 6).

Assessment

Subject knowledge and understanding is mainly assessed at Level C through written examination and individual and group reports (A1-5). Personal development, planning, group working and ethical issues are also assessed through essays and a simulated business group project report (A6).

Intellectual skills are assessed by written examination, assignments, case studies, practical work and in-class tests (B1-5). Personal development is assessed by individual and group reports and presentations (B6).

Practical skills are assessed through individual reports of practical studio work and presentations (C1-5) and oral presentations and reflective reports for C6.

Transferable skills are assessed mainly through coursework reports and presentations, both independently and in groups, as well as using essays (D1-5). Written examinations, including case studies are used to assess some components of the transferable skills such as global perspectives (D6).

5.8 BSc (Hons) Music & Sound Production Technology

For a mapping of the Program Outcomes/Level Outcomes to Unit ILOs see Appendix 2.

5.8.1 Programme Outcomes - Level H

This programme provides opportunities for students to develop and demonstrate knowledge and understanding, and skills, as follows:

A  Subject knowledge and understanding

A1. Principles and practices of creative music and audio technology systems

A2. Techniques for music and audio synthesis and processing

A3. Production of music or audio in a variety of creative contexts in response to a creative brief
A4. Design and integration of music creation, recording, performance, duplication and delivery systems, for example in a studio environment

A5. Apply advanced technology for studio recording, editing, manipulation and production

A6. Business models, marketing, legal, ethics and professional media technology requirements

B Intellectual skills

B1. Creatively apply analysis, design, development and integration modelling concepts for the production of music and audio technology systems

B2. Elicit, organise and conceptualise requirements for music and audio technology systems by evaluation of context specific requirements

B3. Design infrastructures by selecting music and audio technology components to complete fully integrated systems

B4. Critically appraise their creative output in response to the brief and discriminate between alternative arguments and approaches.

B5. Identify common aims and objectives to integrate music and audio processes with technical multimedia solutions

B6. Apply project management judgements taking account of aesthetics, ethics, sustainability, human factors, usability, reliability, costs, benefits, and risks.

C Subject specific / practical skills

C1. Create professional high performance music and audio systems

C2. Apply rational design methods to design and build sound technology systems

C3. Apply appropriate technology to implement a music and/or audio production

C4. Set up and optimise state of the art music and audio systems

C5. Produce music and sound to a professional level.

C6. Apply the principles of project management to develop solutions systematically

D Transferable skills
D1. Structure, organise and use ideas creatively to communicate orally and in writing

D2. Plan, conduct and report on work within a set timeframe

D3. Work effectively, efficiently and ethically individually and in groups

D4. Learn collectively and independently with a critical viewpoint in a variety of familiar and unfamiliar organisational and technical situations

D5. Influence others creatively and constructively in seeking optimum solutions

D6. Work in a sustainable context while appreciating global perspectives and challenges

Learning and Teaching Methods and Strategies

Outcomes A1-A6 is acquired mainly through a combination of lectures, small group laboratories, studios, seminar classes, and the individual project. As the pathway progresses, students elicit music and audio technical needs (A1) and their recording needs (A5) for different aesthetic contexts (A3, A4) and organisational needs (A6). They develop, evaluate and integrate high performance music and audio systems (A3-5).

Students select, evaluate and integrate music and audio technology systems to efficiently manipulate and distribute created artefacts (A2) with an understanding of novel business models (A6). The importance of directed reading is emphasised to students throughout Levels C and I. At Level H, emphasis shifts towards the importance of independent research and learning through extensive reading to consolidate and deepen knowledge and understanding (A1-6).

Creativity, analysis design and development skills (B1-3) are developed through lectures, weekly small group exercises and throughout the individual Level H project. Research, experimental and design skills (B1-4) are developed through coursework activities, studio sessions and the level H project. Skills in analysis and critical interpretation are developed through creative experimentation, case studies, portfolio building and the individual project (B4).

As knowledge and skills develop, better opportunities arise to identify common aims and objectives to integrate technological and aesthetic multimedia solutions and to apply appropriate professional and ethical judgements individually and in groups (B5, 6). A keystone of intellectual skill development is the detailed feedback given to students on all their coursework in the form of formative assessment. Students are strongly encouraged to reflect on their results and evaluate their own work via the PDP website and student profiling arrangements or independently (B1-6).
Skills (C1-4) are developed throughout the pathway mainly in small groups in simulated business situations. Practical application of project management principles and the ability to work in groups (C5, 6) are learned through the level.

Communication skills (D1) are developed using case studies and presentations as well as written reports. Structuring and planning work (D2) is developed right from the start of the pathway and throughout. Creativity, reflection and critical thinking in individual and group learning is sought throughout the pathway to develop lifelong learners in the profession for all students and given special emphasis at Level H, for example in the individual project (D3-6).

**Assessment**

Assessment of subject knowledge and understanding is through written examination, individual and group reports, project builds and presentations for A1-6.

For the pathway as a whole, assessment of intellectual skills is mainly through unseen examination (B1-4), in-class tests (B5), essays (B1-4), individual reports (B1-6), and group reports (B5 & 6).

For the pathway as a whole the practical skills are assessed through individual reports and group reports (C1-6) as well as demonstrations, presentations and viva voce examinations.

For the pathway as a whole, the transferable skills (D1-6) are assessed through written examination (D1), case study examination and essays (D2), individual reports (D1-4) and group reports (D2-6).

**5.8.2 Level Outcomes – Level I**

**A Subject knowledge and understanding**

A1. Theory and practice of composing music and sound for other media contexts

A2. Principles and practices of music and sound creation, processing and recording

A3. Tools and techniques for creation and recording of music and sound

A4. Design and implementation techniques for production of music and audio

A5. Principles of market analysis and legal processes

A6. Project management techniques including teamwork, ethics and professionalism
**B Intellectual skills**

B1. Choose between methods and tools for creating and recording music and audio

B2. Evaluate music and audio post-production techniques

B3. Evaluate different approaches in the creation of new music and sound material.

B4. Evaluate music and audio tools for the design of a product

B5. Evaluate MIDI equipment, sequencing software, main tools and techniques for producing music and audio

B6. Reflect on legal issues and project management techniques in well-known situations

**C Subject specific / practical skills**

C1. Apply appropriate tools and techniques for creation and recording of music and audio

C2. Apply appropriate post-production tools and techniques to recorded music and audio to meet final product specification

C3. Integrate and synchronise MIDI equipment for a recording environment

C4. Apply design methods, tools and techniques to integrate music and audio

C5. Apply simple project management techniques for the development of media components and their integration

C6. Ethically make a contribution as member of a team

**D Transferable skills**

D1. Organise and use ideas to communicate orally and in writing

D2. Plan, conduct and report on work within a set time

D3. Work ethically individually and in groups

D4. Learn independently in contexts of intermediate complexity

D5. Work in groups to seek creative solutions to problems

D6. Understand issues of sustainability, regeneration and global challenges
Learning and Teaching Methods and Strategies

Students acquire outcomes A1-4 mainly through a combination of lectures, small group studio sessions and seminars. As the pathway progresses they have the opportunity to learn and apply tools and techniques for recording and processing audio and video to meet the specification of finish products. Additional knowledge is acquired by individual and group work presented within the context of the simulated situation of a substantial project build of medium scale music and audio solutions (A5). The emphasis of the work for each group member is the main learning topics of their choice of final year named pathway (A1-6).

The evaluation and Analysis skills (B1-5) are developed through lectures, weekly small group discussions, and exercises in computer laboratories and audio studios. The requirement analysis for product development and distributed media systems will be developed through case studies, coursework and group projects (B3 and B5). The individual component of the group project must relate directly to a topic area of the student’s named pathway. The group project activities also provide opportunity to reflect on project management techniques (B6).

Skills (C1-6) are developed mainly in small group laboratories, audio and recording studios and seminars. Students will develop, test and deploy software for music and audio applications (C1). Appropriate tools and techniques will be applied for processing of audio, music, synchronisation and integration during the studio sessions (C1-4). Group work and ethical professional practices (C5 &6) are developed in individual coursework and the integrating group project, which must relate to the students named pathway.

The importance of students accruing skills of learning independently are stressed throughout the level (D4). Communication skills are developed mainly through small group seminars and group work (D1). Skills of organising, planning, project management and global perspectives (D1-6) are developed mainly through lectures and small group laboratories and seminars in most units during the level.

Assessment

At this level, assessment of subject knowledge is through written examination and case study examination (A1-4), individual and group reports (A5 & 6).

Assessment is through practical work and written examination (B1-5), individual reports (B1-6) and group reports (B6).

Assessment of practical skills is through individual reports, demonstrations of finish product and presentations (C1-6), individual group reports (C5 & 6), written and case study examination (C3 & 4).

Case studies and coursework assignments, for example AV presentations are used to assess communication skills (D1). The skills of planning, carrying out and reporting on work individually and in groups are developed through all
units with coursework assignments, individual and group reports (D2-5). Global perspectives and a regard for sustainability and regeneration are assessed throughout the units (D6).

5.8.3 **Level Outcomes – Level C**

**A Subject knowledge and understanding**

A1. Principles of music and audio representation

A2. Principles of music and audio recording and post-processing

A3. Principles of computer systems and networks requirements for distributed media and entertainment systems

A4. Composition methodologies for the development of music and sound material

A5. Principles of music and sound production

A6. Personal development, business models, marketing, ethical, legal, professional, sustainability, regeneration and global context of 1-5

**B Intellectual skills**

B1. Understanding of music and audio signals and representation, creation, recording technologies, techniques and processes

B2. Familiarity with production tools and techniques in relation to musical genre

B3. Use the main concepts and functions of computer architectures and network components

B4. Reflection and analysis of different approaches to a compositional brief

B5. Take appropriate approaches in creative product design

B6. Report writing, presentation, working in groups and project management tools and techniques

**C Subject specific / practical skills**

C1. Apply tools and techniques to create and record music and audio

C2. Apply relevant tools to process music and audio

C3. Configure computers and build basic computer networks

C4. Produce music and sound within specified constraints.
C5. Manage time and effort, achieve deadlines and decide priorities
C6. Contribute efficiently and effectively to individual and group work

D **Transferable skills**

D1. Communicate orally and in writing using appropriate structures, facts and events
D2. Conduct and report within a set time and context on work assigned
D3. Work independently with appreciation of ethical actions
D4. Find facts to describe and explain simple phenomena and artefacts
D5. Work efficiently and effectively in small groups within limited and set contexts
D6. Appreciate that sustainable regenerative design solutions require ethical and global perspectives

**Learning and Teaching Methods and Strategies**

The outcomes are acquired by students mainly through a combination of lectures and small group classes such as laboratories, studios and seminars (A1-5) and tutorial support sessions. Additional teaching occurs in the context of well-defined business simulations and group projects to explore the personal development, ethical and other issues (A6).

Understanding of data representation and post-processing (B1-2), computer architecture and system design life cycle (B3 & 5) are developed through lectures and small group laboratories, studios, individual and group reports and essays. Reflection and analysis skills are developed in small group studio sessions (B4). Personal development and project management skills are developed in a combination of lectures and seminars as well as group projects (B6).

The ability to provide practical solutions to music and audio, video recording and processing, computer configuration and basic network set-up are learned through lectures and workshop sessions. Workshop activities include working in laboratories and studios on practical program development, and practical network construction (C1-4).

The skill of developing music and sound within specific constraints is acquired through small group studio work. (C4). The skill of managing students’ time and working efficiently in groups is developed in most units especially in group projects and the simulated business activities (C5 &6).
Communication skills are developed using case studies, writing coursework reports and teaching in small groups (D1). The importance of organising, structuring and working independently are taught throughout the level but mainly in the personal development component of the level (D1-4). The practical skill of ethical action and global perspectives are taught by means of lectures and small group seminars (D3, 5 & 6).

Assessment

Subject knowledge and understanding is mainly assessed at Level C through written examination and individual and group reports (A1-5). Personal development, planning, group working and ethical issues are also assessed through essays and a simulated business group project report (A6).

Intellectual skills are assessed by written examination, assignments, case studies, practical work and in-class tests (B1-5). Personal development is assessed by individual and group reports and presentations (B6).

Practical skills are assessed through individual reports of practical studio work and presentations (C1-5) and oral presentations and reflective reports for C6.

Transferable skills are assessed mainly through coursework reports and presentations, both independently and in groups, as well as using essays (D1-5). Written examinations, including case studies are used to assess some components of the transferable skills such as global perspectives (D6).

5.9 BSc (Hons) Games Technology

For a mapping of the Program Outcomes/Level Outcomes to Unit ILOs see Appendix 3.

5.9.1 Programme Outcomes – Level H

This programme provides opportunities for students to develop and demonstrate knowledge and understanding, and skills, as follows:

A Subject knowledge and understanding

A1. Principles and practices of creative game development
A2. Integration of graphics, sound and music components
A3. Principles and practices of human computer interaction for games
A4. Relationships between hardware and software architectures in game systems
A5. Principles/practices of asset/content creation for 2D/3D applications
A6. Business models, marketing, legal, ethics and professional games technology requirements

B  Intellectual skills

B1. Creatively apply analysis, design, development and interaction modelling concepts for the production of game technology systems

B2. Elicit, organise and conceptualise requirements for game technology systems by evaluation of context specific requirements coupled with application of the de facto standards and methodologies employed within the industry

B3. Design infrastructures by selecting appropriate components to complete fully integrated media and game systems

B4. Analyse and critically interpret experimental results to optimise performance

B5. Identify common aims and objectives to integrate creative media and game processes for technical solutions

B6. Apply project management judgements that balance aesthetics, ethics, sustainability, human factors, usability, reliability, costs, benefits, and risks

C  Subject specific / practical skills

C1. Create professional high performance game technology solutions

C2. Apply rational design methods to design and integrate game technology components

C3. Design and implement distributed game systems using state of the art game technology communication systems

C4. Build technical media systems appropriate to creative aesthetic requirements

C5. Apply human computer interaction algorithms in a completed prototype game scenario

C6. Apply the principles of project management to develop systems systematically

C7. Work effectively and efficiently in making a contribution as member of a team

D  Transferable skills
D1. Structure, organise and use ideas creatively to communicate orally and in writing

D2. Plan, conduct and report on work within a set timeframe

D3. Work effectively, efficiently and ethically individually and in groups

D4. Learn collectively and independently with a critical viewpoint in a variety of familiar and unfamiliar organisational and technical situations

D5. Influence others creatively and constructively in seeking optimum solutions

D6. Work in a sustainable context while appreciating global perspectives and challenges

Learning and Teaching Methods and Strategies

Outcomes A1-A6 is acquired mainly through a combination of lectures, small group laboratories, studios, seminar classes and the individual project. As the pathway progresses, students elicit creative media technical needs (A1) and their integration requirements (A2). Students develop, evaluate and integrate high performance media technologies such as game interfaces and media entertainment systems (A2, A3). All this is displayed with an understanding of novel business models (A6). The importance of directed reading is emphasised to students throughout Levels C and I. At Level H, emphasis shifts towards the importance of independent research and learning through extensive reading to consolidate and deepen knowledge and understanding (A1-6).

Creativity, analysis, design and development (B1-3) are developed through lectures, weekly small group exercises and throughout the individual Level H project. Research, experimental and design skills (B1-4) are developed through coursework activities, studio experiments, the Group Project unit in Level I and the Level H project. Skills in analysis, critical interpretation and optimisation of experimental results are developed through laboratory and studio experimentation, case studies and the individual project (B4). As knowledge and skills develop, better opportunities arise to identify common aims and objectives to integrate technological and aesthetic media solutions and to apply appropriate professional and ethical judgements individually and in groups (B5, B6). A keystone of intellectual skill development is the detailed feedback given to students on all their coursework in the form of formative assessment. Students are strongly encouraged to reflect on their results and evaluate their own work independently (B1-6).

Skills (C1-5) are developed throughout the pathway mainly in small groups in simulated creative situations such as studios and laboratories. Practical application of project management principles and the ability to work in groups (C6-C7) are learned throughout.
Communication skills (D1) are developed using case studies and presentations as well as written reports. Structuring and planning work (D2) is developed right from the start of the pathway and throughout. Creativity, reflection and critical thinking in individual and group learning is sought throughout the pathway to develop lifelong learners in the profession and given special emphasis at Level H, one example being the individual project (D3-6).

Assessment

Assessment of subject knowledge and understanding is through written examination, individual and group reports, project builds and presentations for A1-6.

For the pathway as a whole, assessment of intellectual skills is mainly through unseen examination, in-class tests, essays, individual reports and group reports (B1-B6).

For the pathway as a whole the practical skills are assessed through individual reports and group reports (C1-7) as well as demonstrations, presentations and viva voce examinations.

For the pathway as a whole, the transferable skills (D1-D6) are assessed through written examination (D1), case study examination and essays (D2), individual reports (D1-D4) and group reports (D2-D6).

5.9.2 Level Outcomes – Level I

This programme provides opportunities for students to develop and demonstrate knowledge and understanding, and skills, as follows:

A Subject knowledge and understanding

A1. Principles of game and graphics programming with audio and media components
A2. Understanding of the fundamentals of artificial intelligence
A3. Tools and techniques for developing mobile game components
A4. Principles and practices in advanced level game asset development
A5. Principles of market analysis and legal processes
A6. Project management techniques including teamwork, ethics and professionalism

B Intellectual skills

B1. Choose between methods and techniques for creating mobile games
B2. Evaluate game asset development techniques

B3. Analyse the requirement specification for creation of mobile game solutions

B4. Evaluate audio and video authoring tools for the design and implementation of a technical solution

B5. Evaluate main tools and techniques for integrating media components for distributed entertainment systems

B6. Reflect on project management techniques used for game development

C **Subject specific / practical skills**

C1. Apply appropriate tools and techniques for creation of mobile games

C2. Apply appropriate tools and techniques to develop 3D models, animations and game levels to specific requirements

C3. Apply the fundamentals of artificial intelligence in the context of games

C4. Apply design methods, tools and techniques to integrate mobile applications

C5. Apply simple project management techniques for the development of media components and their integration

C6. Ethically make a contribution as member of a team

D **Transferable skills**

D1. Organise and use ideas to communicate orally and in writing

D2. Plan, conduct and report on work within a set time

D3. Work ethically individually and in groups

D4. Learn independently in context of intermediate complexity

D5. Work in groups to seek creative solutions to problems

D6. Understanding of the issues of sustainability, regeneration and global challenges

**Learning and Teaching Methods and Strategies**

Students acquire outcomes A1-4 mainly through a combination of lectures, small group laboratories and seminars. Additional knowledge is acquired by
individual and group work presented within the context of the simulated situation of a substantial project build (A5, A6).

The evaluation and Analysis skills (B1-5) are developed through lectures, weekly small group discussions and exercises in computer laboratories. The requirement analysis for product development and distributed media systems will be developed through case studies, coursework and group projects (B3 and B5). The individual component of the group project must relate directly to a topic area of the student’s named pathway. The group project activities also provide opportunity to reflect on project management techniques (B6).

Skills (C1-6) are developed mainly in small group laboratories and seminars. Students will develop, test and deploy software for mobile games, graphics, AI, animation and game levels (C1-C4).

The importance of students accruing skills of learning independently are stressed throughout the level (D4). Communication skills are developed mainly through small group seminars and group work (D1). Skills of organising, planning, project management and global perspectives (D1-6) are developed mainly through lectures and small group laboratories and seminars in most units during the level.

**Assessment**

At this level, assessment of subject knowledge is through written examination and case study examination plus individual and group reports (A1-6).

Assessment of intellectual skills is through practical work and written examination, individual reports and group reports (B1-B6).

Assessment of practical skills is mainly through individual reports, demonstrations of finished product and presentations, group reports, written and case study examinations (C1-C6).

For some case studies and coursework assignments AV presentations are used to assess communication skills (D1). The skills of planning, carrying out and reporting on work individually and in groups are developed through all units with coursework assignments plus individual and group reports (D2-5). Global perspectives and a regard for sustainability and regeneration are assessed throughout the units (D6).

**5.9.3 Level Outcomes - Level C**

**A Subject knowledge and understanding**

A1. Principles of 3D modelling

A2. Principles of game content and game asset development

A3. Principles of computer systems and networks requirements for distributed media and entertainment systems
A4. Creative product design methodologies
A5. Software development methodologies and syntax for a programming language and a scripting language
A6. Personal development, business models, marketing, ethics, legal aspects, professionalism, sustainability, regeneration and global contexts
A7. Understanding of the fundamentals of mathematics and physics for games development

B Intellectual skills
B1. Understanding of image and media representation, creation, techniques and processes
B2. Familiarity with production tools and techniques for game development
B3. Use of the main concepts and functions of computer architectures and network components
B4. Design software programs to a given specification
B5. Take appropriate approaches for creative product design
B6. Report writing, presentation techniques, working in groups and project management tools and techniques

C Subject specific / practical skills
C1. Apply tools and techniques for the creation of game assets
C2. Apply relevant tools to process images and geometric models
C3. Configure computers and build basic computer networks
C4. Design and code software programs from first principles
C5. Manage time and effort, achieve deadlines and decide priorities
C6. Contribute efficiently and effectively to individual and group work
C7. Apply fundamental mathematics and physics for games

D Transferable skills
D1. Communicate orally and in writing using appropriate structures, facts and events
D2. Conduct and report within a set time and context on work assigned

D3. Work independently with appreciation of ethical actions

D4. Find facts to describe and explain simple phenomena and artefacts

D5. Work efficiently and effectively in small groups within limited and set contexts

D6. Appreciate that sustainable regenerative design solutions require ethical and global perspectives

**Learning and Teaching Methods and Strategies**

The outcomes are acquired by students mainly through a combination of lectures and small group classes such as laboratories, studios and seminars (A1, A2, A3, A4, A5 and A7) and tutorial support sessions. Additional teaching occurs in the context of well-defined business simulations and group projects to explore the personal development, ethical and other issues (A6).

Understanding of data representation and game production using tools (B1-2), computer architecture and system design life cycle (B3 and 5) are developed through lectures and small group laboratories, studios, individual and group reports and essays. Software development skills are developed in small group laboratories (B4). Personal development and project management skills are developed in a combination of lectures and seminars as well as group projects (B6).

The abilities to provide practical solutions are learned through lectures and workshop sessions. Workshop activities include, amongst others, working in laboratories and studios on practical program development and practical network construction (C1-4 and C7). The skill of reading and writing computer programs is acquired through small group laboratory work (C4). The skill of managing one’s time and working efficiently in groups is developed in most units especially in group projects and the simulated business activities (C5 &6).

Communication skills are developed using case studies, writing coursework reports and teaching in small groups (D1). The importance of organising, structuring and working independently are taught throughout the level but mainly in the personal development component of the level (D1-4). The practical skill of ethical action and global perspectives are taught by means of lectures and small group seminars (D3, D5 and D6).

**Assessment**

Subject knowledge and understanding is mainly assessed at Level C through written examination and individual and group reports (A1, A2, A3, A4, A5 and A7). Personal development, planning, group working and ethical issues are
also assessed through essays and a simulated business group project report (A6).

Intellectual skills are assessed by written examination, assignments, case studies, practical work and in-class tests (B1-B5). Personal development is assessed by individual and group reports and presentations (B6).

Practical skills are assessed through individual reports of practical laboratory work and presentations (C1-C5 and C7) and oral presentations and reflective reports for C6.

Transferable skills are assessed mainly through coursework reports and presentations, both independently and in groups, as well as using essays (D1-D5). Written examinations, including case studies are used to assess some components of the transferable skills such as global perspectives (D6).

5.10 BSc (Hons) Games Programming

For a mapping of the Program Outcomes/Level Outcomes to Unit ILOs see Appendix 4.

5.10.1 Programme Outcomes – Level H

This programme provides opportunities for students to develop and demonstrate knowledge and understanding, and skills, as follows:

**A  Subject knowledge and understanding**

A1. Principles and practices of software engineering

A2. Integration of graphics, sound and music components

A3. Programming for/a contemporary game engine setting

A4. Relationships between hardware and software architectures in games programming

A5. Games programming techniques for a multitude of platforms and applications

A6. Business models, marketing, legal, ethics and professional games programming requirements

**B  Intellectual skills**

B1. Design of games and software for games with the use of objected-oriented programming concepts

B2. Elicit, organise and conceptualise requirements for games programming by evaluation of context specific requirements coupled
with application of the de facto standards and methodologies employed within the industry

B3. Design infrastructures by selecting appropriate components to complete fully integrated media and game systems

B4. Analyse and critically interpret experimental results to optimise performance

B5. Identify common aims and objectives to integrate creative media and game processes for technical solutions

B6. Apply project management judgements that balance aesthetics, ethics, sustainability, human factors, usability, reliability, costs, benefits, and risks

C **Subject specific / practical skills**

C1. Create professional high-performance games programming solutions

C2. Apply rational design methods to design and integrate game program components

C3. Design and implement distributed game systems using state of the art game technology communication systems

C4. Application of object-oriented programming techniques to contemporary game technology development

C5. Application of advanced rendering techniques for graphics and games

C6. Apply the principles of project management to develop systems systematically

C7. Work effectively and efficiently in making a contribution as member of a team

D **Transferable skills**

D1. Structure, organise and use ideas creatively to communicate orally and in writing

D2. Plan, conduct and report on work within a set timeframe

D3. Work effectively, efficiently and ethically individually and in groups

D4. Learn collectively and independently with a critical viewpoint in a variety of familiar and unfamiliar organisational and technical situations
D5. Influence others creatively and constructively in seeking optimum solutions

D6. Work in a sustainable context while appreciating global perspectives and challenges

Learning and Teaching Methods and Strategies

Outcomes A1-A6 is acquired mainly through a combination of lectures, small group laboratories, studios, seminar classes and the individual project. As the pathway progresses, students for Games Programming focus on software engineering for the given context (A1) and all the related content integration requirements (A2). Students develop for, evaluate and integrate work with aspects of the medium such as game engines (A2, A3). All this is displayed with an understanding of novel business models (A6). The importance of directed reading is emphasised to students throughout Levels C and I. At Level H, emphasis shifts towards the importance of independent research and learning through extensive reading to consolidate and deepen knowledge and understanding (A1-6).

Creativity, analysis, design and development (B1-3) are developed through lectures, weekly small group exercises and throughout the individual Level H project. Research, experimental and design skills (B1-4) are developed through coursework activities, studio experiments, the Group Project unit in Level I and the Level H project. Skills in analysis, critical interpretation and optimisation of experimental results are developed through laboratory and studio experimentation, case studies and the individual project (B4). As knowledge and skills develop, better opportunities arise to identify common aims and objectives to integrate technological and aesthetic media solutions and to apply appropriate professional and ethical judgements individually and in groups (B5, B6). A keystone of intellectual skill development is the detailed feedback given to students on all their coursework in the form of formative assessment. Students are strongly encouraged to reflect on their results and evaluate their own work independently (B1-6).

Skills (C1-5) are developed throughout the pathway mainly in small groups in simulated creative situations such as studios and laboratories. Practical application of project management principles and the ability to work in groups (C6-C7) are learned throughout.

Communication skills (D1) are developed using case studies and presentations as well as written reports. Structuring and planning work (D2) is developed right from the start of the pathway and throughout. Creativity, reflection and critical thinking in individual and group learning is sought throughout the pathway to develop lifelong learners in the profession and given special emphasis at Level H, one example being the individual project (D3-6).

Assessment
Assessment of subject knowledge and understanding is through written examination, individual and group reports, project builds and presentations for A1-6.

For the pathway as a whole, assessment of intellectual skills is mainly through unseen examination, in-class tests, essays, individual reports and group reports (B1-B6).

For the pathway as a whole the practical skills are assessed through individual reports and group reports (C1-7) as well as demonstrations, presentations and viva voce examinations.

For the pathway as a whole, the transferable skills (D1-D6) are assessed through written examination (D1), case study examination and essays (D2), individual reports (D1-D4) and group reports (D2-D6).

5.10.2 Level Outcomes – Level I

This programme provides opportunities for students to develop and demonstrate knowledge and understanding, and skills, as follows:

A  Subject knowledge and understanding

A1. Principles of game and graphics programming with audio and media components

A2. Understanding of the fundamentals of artificial intelligence

A3. Tools and techniques for developing mobile game components

A4. Object-oriented programming fundamentals

A5. Principles of market analysis and legal processes

A6. Project management techniques including teamwork, ethics and professionalism

B  Intellectual skills

B1. Choose between methods and techniques for creating mobile games

B2. Applying object-oriented programming techniques in the design of software

B3. Analyse the requirement specification for creation of mobile game solutions

B4. Evaluate audio and video authoring tools for the design and implementation of a technical solution
B5. Evaluate main tools and techniques for integrating media components for distributed entertainment systems

B6. Reflect on project management techniques used for game development

C  Subject specific / practical skills

C1. Apply appropriate tools and techniques for creation of mobile games

C2. Use of fundamental objected-oriented programming for games development

C3. Apply the fundamentals of artificial intelligence in the context of games

C4. Apply design methods, tools and techniques to integrate mobile applications

C5. Apply simple project management techniques for the development of media components and their integration

C6. Ethically make a contribution as member of a team

D  Transferable skills

D1. Organise and use ideas to communicate orally and in writing

D2. Plan, conduct and report on work within a set time

D3. Work ethically individually and in groups

D4. Learn independently in context of intermediate complexity

D5. Work in groups to seek creative solutions to problems

D6. Understanding of the issues of sustainability, regeneration and global challenges

Learning and Teaching Methods and Strategies

Students acquire outcomes A1-4 mainly through a combination of lectures, small group laboratories and seminars. Additional knowledge is acquired by individual and group work presented within the context of the simulated situation of a substantial project build (A5, A6).

The evaluation and Analysis skills (B1-5) are developed through lectures, weekly small group discussions and exercises in computer laboratories. The requirement analysis for product development and distributed media systems will be developed through case studies, coursework and group projects (B3 and B5). The individual component of the group project must relate directly to
a topic area of the student’s named pathway. The group project activities also provide opportunity to reflect on project management techniques (B6).

Skills (C1-6) are developed mainly in small group laboratories and seminars. Students will develop, test and deploy software for mobile games, graphics, AI and also introduce objected oriented techniques into their software design (C1-C4).

The importance of students accruing skills of learning independently are stressed throughout the level (D4). Communication skills are developed mainly through small group seminars and group work (D1). Skills of organising, planning, project management and global perspectives (D1-6) are developed mainly through lectures and small group laboratories and seminars in most units during the level.

Assessment

At this level, assessment of subject knowledge is through written examination and case study examination plus individual and group reports (A1-6).

Assessment of intellectual skills is through practical work and written examination, individual reports and group reports (B1-B6).

Assessment of practical skills is mainly through individual reports, demonstrations of finished product and presentations, group reports, written and case study examinations (C1-C6).

For some case studies and coursework assignments AV presentations are used to assess communication skills (D1). The skills of planning, carrying out and reporting on work individually and in groups are developed through all units with coursework assignments plus individual and group reports (D2-5). Global perspectives and a regard for sustainability and regeneration are assessed throughout the units (D6).

5.10.3 Level Outcomes - Level C

A  Subject knowledge and understanding

A1. Principles of 3D modelling

A2. Principles of game content and game asset development

A3. Principles of computer systems and networks requirements for distributed media and entertainment systems

A4. Creative product design methodologies

A5. Software development methodologies and syntax for a programming language and a scripting language
A6. Personal development, business models, marketing, ethics, legal aspects, professionalism, sustainability, regeneration and global contexts

A7. Understanding of the fundamentals of mathematics and physics for games development

B  Intellectual skills

B1. Understanding of image and media representation, creation, techniques and processes

B2. Familiarity with production tools and techniques for game development

B3. Use of the main concepts and functions of computer architectures and network components

B4. Design software programs to a given specification

B5. Take appropriate approaches for creative product design

B6. Report writing, presentation techniques, working in groups and project management tools and techniques

C  Subject specific / practical skills

C1. Apply tools and techniques for the creation of game assets

C2. Apply relevant tools to process images and geometric models

C3. Configure computers and build basic computer networks

C4. Design and code software programs from first principles

C5. Manage time and effort, achieve deadlines and decide priorities

C6. Contribute efficiently and effectively to individual and group work

C7. Apply fundamental mathematics and physics for games

D  Transferable skills

D1. Communicate orally and in writing using appropriate structures, facts and events

D2. Conduct and report within a set time and context on work assigned

D3. Work independently with appreciation of ethical actions

D4. Find facts to describe and explain simple phenomena and artefacts
D5. Work efficiently and effectively in small groups within limited and set contexts

D6. Appreciate that sustainable regenerative design solutions require ethical and global perspectives

Learning and Teaching Methods and Strategies

The outcomes are acquired by students mainly through a combination of lectures and small group classes such as laboratories, studios and seminars (A1, A2, A3, A4, A5 and A7) and tutorial support sessions. Additional teaching occurs in the context of well-defined business simulations and group projects to explore the personal development, ethical and other issues (A6).

Understanding of data representation and game production using tools (B1-2), computer architecture and system design life cycle (B3 and 5) are developed through lectures and small group laboratories, studios, individual and group reports and essays. Software development skills are developed in small group laboratories (B4). Personal development and project management skills are developed in a combination of lectures and seminars as well as group projects (B6).

The abilities to provide practical solutions are learned through lectures and workshop sessions. Workshop activities include, amongst others, working in laboratories and studios on practical program development and practical network construction (C1-4 and C7). The skill of reading and writing computer programs is acquired through small group laboratory work (C4). The skill of managing one’s time and working efficiently in groups is developed in most units especially in group projects and the simulated business activities (C5 &6).

Communication skills are developed using case studies, writing coursework reports and teaching in small groups (D1). The importance of organising, structuring and working independently are taught throughout the level but mainly in the personal development component of the level (D1-4). The practical skill of ethical action and global perspectives are taught by means of lectures and small group seminars (D3, D5 and D6).

Assessment

Subject knowledge and understanding is mainly assessed at Level C through written examination and individual and group reports (A1, A2, A3, A4, A5 and A7). Personal development, planning, group working and ethical issues are also assessed through essays and a simulated business group project report (A6).

Intellectual skills are assessed by written examination, assignments, case studies, practical work and in-class tests (B1-B5). Personal development is assessed by individual and group reports and presentations (B6).
Practical skills are assessed through individual reports of practical laboratory work and presentations (C1-C5 and C7) and oral presentations and reflective reports for C6.

Transferable skills are assessed mainly through coursework reports and presentations, both independently and in groups, as well as using essays (D1-D5). Written examinations, including case studies are used to assess some components of the transferable skills such as global perspectives (D6).

5.11 MSc Digital Music & Audio Production

5.11.1 Programme Outcomes

This M Level programme provides opportunities for students to develop and demonstrate knowledge, and understanding, and skills as follows:

A Subject Knowledge and Understanding

This programme provides opportunities for students to develop and demonstrate knowledge and understanding of:

A1. Demonstration of the strategic issues relating to business and enterprise in the digital medium
A2. Systematic design processes, involving analysing and solving novel and original content creation problems
A3. Selection and application of different techniques used in the creation and sharing of music content, with special emphasis on digital networking
A4. Demonstrate full knowledge and understanding of appropriate modern techniques required for the analysis and processing of novel and original digital music
A5. Business innovation and entrepreneurship principles and techniques
A6. The advantages and limitations of utilising simulation tools in the content creation process

Learning and Teaching Methods and Strategies

Core knowledge and understanding is acquired through lectures, seminars, tutorials, workshops, relevant fieldwork and independent learning. Students are expected to undertake independent reading and to relate the concepts introduced in different units. Regular feedback on assignments allows students to refine and develop their understanding.

Assessment

The core knowledge and understanding is assessed through appropriately structured coursework reports, presentations and examination (A1 - 6).
B Intellectual Skills

This programme provides opportunities for students to develop and demonstrate skills, as follows:

B1. Critical thinking, problem solving and decision making to solve complex business problems required for today’s and tomorrow’s Music Industry

B2. Critical evaluation and justification of alternative approaches to novel and original content sharing via a digital medium

B3. Demonstrate critical awareness of the scope and limitations of techniques and computer-based models for the analysis of Music

B4. Critical evaluation of different research methods and selection and application of them

B5. Communication of project findings to professional and academic standards

B6. Planning, execution and reporting on a project involving content creation

Learning and Teaching Methods and Strategies

Intellectual skills are developed through the learning and teaching methods and strategies outlined above. Many units of the programme involve extensive in-class discussions and the opportunity in some units to deal with real data and “live” creative engineering problems.

Assessment

The intellectual skills are assessed through report based coursework, often involving case studies and presentations (B1 – B6).

C  Subject specific / practical skills

This programme provides opportunities for students to develop and demonstrate skills, as follows:

C1. Conduct strategic external analysis to formulate business strategy

C2. Apply and critically evaluate various management techniques to ensure efficient operation of a project

C3. Select appropriate strategies to successfully plan and execute a networked music delivery system

C4. Independently apply advanced simulation tools to analyse music and audio

C5. Diagnose the causes of the different types of failure in content sharing systems and the ability to propose methods of avoiding them in future

C6. Present research findings in a range of effective and appropriate formats and prepare technical reports and specifications
Learning and Teaching Methods and Strategies

Subject specific skills are developed through the learning and teaching methods outlined above. Many of the taught units of the programme involve extensive in class discussions and the opportunity in some units to deal with real data derived from recent research and consultancy activities, and from “live” design problems. Where subjects involve the development of simulation tool skills, the candidate will be given as much hands-on exposure to appropriate software packages as is possible.

Assessment

Typical coursework assessments to assess learning outcomes C1-C6 would include: the development and analysis of prototype designs for content sharing systems; critical appraisal and recommendations of the solution and the adopted design methodologies; a written report and presentation of solution. In each coursework, it is expected that students will refer to recent, relevant academic papers. These outcomes will also be assessed in the Individual Masters Project.

D  Transferable Skills

This programme provides opportunities for students to develop and demonstrate skills, as follows:

D1. Demonstrate problem solving skills and the application of knowledge across the discipline areas

D2. Gather, select, and analyse a range of experimental and fieldwork data and present professionally using appropriate media

D3. Distil, synthesise and critically analyse alternative approaches and methodologies to problems and research results reported in literature and elsewhere

D4. Demonstrate initiative, self-direction and exercise personal responsibility for management of own learning

D5. Work autonomously and become reflective learners

D6. Communicate effectively and confidentially to appropriate professional and academic standards

Learning and Teaching Methods and Strategies

Transferable skills are acquired through a variety of forms: face-to-face sessions where each may include a mix of delivery modes: lecture, seminar, tutorial, and workshop, guided reading and development, and self-managed study. Students are encouraged to share their academic and industrial expertise with their peers, to enrich the learning process. Regular feedback on assignments allows the students to refine and develop their understanding.
The independent learning element will be partly directed by the unit lecturer with regard to recommended reading (text books, articles and research papers) and tutorial problems to be tackled.

**Assessment**

Learning outcomes D1-D6 will be assessed through coursework assessments and the Individual Masters Project.

### 5.12 MSc Computer Games Technology

#### 5.12.1 Programme Outcomes

This M Level programme provides opportunities for students to develop and demonstrate knowledge, and understanding, and skills as follows:

**A Subject Knowledge and Understanding**

This programme provides opportunities for students to develop and demonstrate knowledge and understanding of:

A1. Demonstration of the strategic issues relating to game development in the gaming industry

A2. Systematic design processes, involving analysing, design and solving game creation and deployment problems

A3. Selection and application of different techniques used in the creation of game assets with special emphasis on game Mathematics, AI and Physics

A4. Demonstrate full knowledge and understanding of appropriate modern techniques required for the analysis and development of networked computer games

A5. Business innovation and entrepreneurship principles and techniques

A6. The advantages and limitations of development tools in the game development process

**Learning and Teaching Methods and Strategies**

Core knowledge and understanding is acquired through lectures, seminars, tutorials, workshops, relevant fieldwork and independent learning. Students are expected to undertake independent reading and to relate the concepts introduced in different units. Regular feedback on assignments allows students to refine and develop their understanding.

**Assessment**

Core knowledge and understanding is assessed through appropriately structured coursework reports, presentations and examination (A1 - 6).
B Intellectual Skills

This programme provides opportunities for students to develop and demonstrate skills, as follows:

B1. Critical thinking, problem solving and decision making to solve complex business problems
B2. Critical evaluation and justification of alternative approaches to development of game assets
B3. Demonstrate critical awareness of the scope and limitations of game Mathematics, AI and Physics for computer game development
B4. Critical evaluation of different research methods and selection and application of them
B5. Communication of project findings to professional and academic standards
B6. Planning, execution and reporting on a project involving game content creation

Learning and Teaching Methods and Strategies

Intellectual skills are developed through the learning and teaching methods and strategies outlined above. Each taught unit of the programme involves extensive in-class discussions and the opportunity in some units to deal with real data and “live” project management problems.

Assessment

The intellectual skills are assessed through report based coursework, often involving case studies and presentations (B1 – B6).

C Subject specific / practical skills

This programme provides opportunities for students to develop and demonstrate skills, as follows:

C1. Conduct strategic external analysis to formulate business strategy
C2. Apply and critically evaluate various management techniques to ensure efficient operation of a project
C3. Select appropriate strategies to successfully plan and execute the development of a computer game
C4. Independently apply a wide variety of software, tools and packages to create, modify and enhance content for inclusion within real-time computer games
C5. Diagnose the causes of the different types of failure in the game development process
C6. Present research findings in a range of effective and appropriate formats and prepare technical reports and specifications

Learning and Teaching Methods and Strategies

Subject specific skills are developed through the learning and teaching methods outlined above. Each taught unit of the programme involves extensive in class discussions and the opportunity in some units to deal with real data derived from recent research and consultancy activities, and from “live” design problems. Where subjects involve the development of computer aided design skills, the candidate will be given as much hands-on exposure to appropriate software packages as is possible.

Assessment

Typical coursework assessments to assess learning outcomes C1-C6 would include: the development and analysis of prototype designs for computer games; critical appraisal and recommendations of the solution and the adopted design methodologies; a written report and presentation of solution. In each coursework, it is expected that students will refer to recent, relevant academic papers. These outcomes will also be assessed in the Individual Masters Project.

D Transferable Skills

This programme provides opportunities for students to develop and demonstrate skills, as follows:

D1. Demonstrate problem solving skills and the application of knowledge across the discipline areas
D2. Gather, select, and analyse a range of experimental and fieldwork data and present professionally using appropriate media
D3. Distil, synthesise and critically analyse alternative approaches and methodologies to problems and research results reported in literature and elsewhere
D4. Demonstrate initiative, self-direction and exercise personal responsibility for management of own learning
D5. Work autonomously and become reflective learners
D6. Communicate effectively and confidentially to appropriate professional and academic standards

Learning and Teaching Methods and Strategies

Transferable skills are acquired through a variety of forms: face-to-face sessions where each may include a mix of delivery modes: lecture, seminar, tutorial, and workshop, guided reading and development, and self-managed study. Students are encouraged to share their academic and industrial
expertise with their peers, to enrich the learning process. Regular feedback on assignments allows the students to refine and develop their understanding.

The independent learning element will be partly directed by the unit lecturer with regard to recommended reading (text books, articles and research papers) and tutorial problems to be tackled.

Assessment

Learning outcomes D1-D6 will be assessed through coursework assessments and the Individual Masters Project.

6 LEARNING AND TEACHING STRATEGIES AND METHODS

The range of learning and teaching methods and strategies employed across the Framework are detailed in Section 5 of this documentation.

7 ASSESSMENT STRATEGIES AND METHODS

Descriptions of how knowledge and understanding, intellectual skills, practical skills and transferable skills are assessed across the Framework are, again, detailed in Section 5. Assessment methods are specified in more detail in the unit specifications (part of the Unit Directory document).

As a summary, these can vary from written examinations, coursework (of practical and written nature), in-class tests, online tests, group work assignments, group and individual presentations and many others. The evident diversity of approaches as briefly listed above is pivotal for assessing work of a creative yet technical nature, as is displayed across the span of the Creative Technology framework.

8 PLACEMENT ELEMENT

8.1 Undergraduate and Postgraduate Placement

8.1.1 Undergraduate

All undergraduate programmes offer a placement year which is part of Level I, but bears no credit rating. The duration of the placement is a minimum of 30-weeks of supervised work experience and the aims of the placement year are
to give the students experience of working within an appropriate professional environment which will contribute to their potential employability, mobility and global awareness. At commencement of the programme all students will be enrolled on the four year sandwich degree. Completion of the four year degree will entitle students to a 'sandwich award'.

During the second year, students will be informed that should they wish to take the three year full-time degree rather than the four year sandwich degree, they will need to complete a transfer application form. Students have to provide a rationale for wishing to change, and their application will be subject to approval by the School’s Placements Panel. Decisions regarding transfer to full-time mode will be completed by the end of January during their second year. Completion of the three year full-time degree will entitle students to a ‘full-time award’.

The placement is recognised at Bournemouth as adding considerable value to graduate profiles and school leavers and their equivalent age group are very strongly advised to follow the sandwich route. The non-sandwich route is designed for mature students who have experience of the world of work and who may need to complete their course in three years, for example, for financial reasons. In some cases, on submission of relevant evidence such students may be eligible for Accreditation of Prior Experiential Learning (APEL). This will give them exemption from the placement year but will still entitle them to a sandwich degree. Consideration of APEL will be discussed by the School’s Placements Panel.

The programme also includes an opportunity (optional) to undertake an 8 week short placement following completion of Level 5/1 study.

8.1.2 Postgraduate

The placement is recognised at Bournemouth as adding considerable value to a postgraduate profile, students have the option to choose a non-placement path. Students make their decision as to undertake placement before the end of the second semester. Placement normally takes place after satisfactory completion of all taught units and before starting the project. Satisfactory completion of a placement will not be indicated on the Masters Certificate. However, it will be reflected on the transcript the students receive.

9 PROGRAMME DIAGRAMS

The following are the detailed programme diagrams for the 6 courses of the framework (4 undergraduate, 2 postgraduate).
Please note the following regarding placement opportunities on all BSc (Hons) programmes.

Placement opportunities

- Successful completion of an optional minimum 30-week placement (between Level 5/I and 6/H)
- or
- Successful completion of an optional short placement of 8 weeks duration (after Level 5/I units and before completion of the Level 6 units).
9.1 BSc (Hons) Music & Audio Technology

PROGRAMME DIAGRAM

BSc (Hons) Music & Audio Technology

Year 4 / Level H

Core units (Compulsory)
- Individual Project (60)
- Creative Music Technology (20)
- Mobile Creative Applications Development (20)
- Innovation and Business Development (20)

BSc (Hons) Music and Audio Technology
Requires 120 credits from each of the Levels H, I and C
- Optional 8 week placement

Year 3 / Level P

For the Sandwich award – Optional placement year in industry
Exemption is possible for those who provide an acceptable rationale for not undertaking the placement

Progression requirements
Satisfactory completion of a minimum 30-weeks of work in industry

Year 2 / Level I

Core units (Compulsory)
- Synthesizers and Sequencing Systems (20)
- Software Programming for Music and Audio (20)
- Digital Audio Signal Processing (20)
- Recording and Acoustics (20)
- Creative Practices (20)
- Commercial Business Environment (20)

Progression Requirements
120 Level I credits

Exit Qualification:
Dip HE Music Technology
120 credits from each of the Levels I and C

Year 1 / Level C

Core units (Compulsory)
- Synthesis & Effects (20)
- Composition and Arrangement (20)
- Production Techniques 1 (20)
- Studio Techniques 1 (20)
- Software Programming for Digital Media (20)
- Creative Business Awareness (20)

Progression Requirements
120 Level C credits

Exit Qualification:
Cert HE Music Technology
120 Level C credits

BSc (Hons) Music and Audio Technology Sandwich
Requires 120 credits from each of the Levels H, I and C, plus successful completion of the placement year
9.2 BSc (Hons) Music and Sound Production Technology

**PROGRAMME DIAGRAM**

**BSc (Hons) Music and Sound Production Technology**

**Year 4 / Level H**

Core units (Compulsory)
- Individual Project (60)
- Creative Music Technology (20)
- Advanced Recording and Production (20)
- Innovation and Business Development (20)

BSc (Hons) Music and Sound Production Technology
Requires 120 credits from each of the Levels H, I and C
- Optional 8 week placement

**Year 3 / Level P**

For the Sandwich award - Optional placement year in industry
Exemption is possible for those who provide an acceptable rationale for not undertaking the placement

Progression requirement
Satisfactory completion of a minimum 30-weeks of work in industry

**Year 2 / Level I**

Core units (Compulsory)
- Synthesizers and Sequencing Systems (20)
- Production Techniques 2 (20)
- Recording and Acoustics (20)
- Composing Using Technology (20)
- Creative Practices (20)
- Commercial Business Environment (20)

Progression Requirements
120 Level I credits

Exit Qualification:
Dip HE Music Technology
120 credits from each of the Levels I and C

**Year 1 / Level C**

Core units (Compulsory)
- Synthesis & Effects (20)
- Composition and Arrangement (20)
- Production Techniques 1 (20)
- Studio Techniques 1 (20)
- Software Programming for Digital Media (20)
- Creative Business Awareness (20)

Progression Requirements
120 Level C credits

Exit Qualification:
Cert HE Music Technology
120 Level C credits
9.3 BSc (Hons) Games Technology

PROGRAMME DIAGRAM

BSc (Hons) Games Technology

Year 4 / Level H

Core units (Compulsory)
- Individual Project (60)
- Modelling and Game Design (20)
- Game Engineering (20)
- Innovation and Business Development (20)

BSc (Hons) Games Technology
Requires 120 credits from each of the Levels H, I and C
- Optional 8 week placement

Year 3 / Level P

For the Sandwich award - Optional placement year in industry
Exemption is possible for those who provide an acceptable rationale for not undertaking the placement

Progression requirement
Satisfactory completion of a minimum 30-weeks of work in industry

Year 2 / Level I

Core units (Compulsory)
- Commercial Business Environment (20)
- Group Project (20)
- Programming for Graphics & Games (20)
- Mobile Games Programming (20)
- Games Content and Asset Creation (20)
- Game Production Techniques 2 (20)

Progression Requirements
120 Level I credits

Exit Qualification:
Dip HE Games Technology
120 credits from each of the Levels I and C

Year 1 / Level C

Core units (Compulsory)
- Creative Business Awareness (20)
- Media Devices & Networks (20)
- Software Programming (40)
- Computer Graphics for Games (20)
- Game Production Techniques 1 (20)

Progression Requirements
120 Level C credits

Exit Qualification:
Cert HE Games Technology
120 Level C credits
9.4 BSc (Hons) Games Programming

**PROGRAMME DIAGRAM**

**BSc (Hons) Games Programming**

**Year 4 / Level H**

**Core units (Compulsory)**
- Innovation and Business Development (20)
- Individual Project (60)
- Graphics & Computational Programming (20)
- Game Engine Programming (20)

**BSc (Hons) Games Programming**
Requires 120 credits from each of the Levels H, I and C
- Optional 8 week placement

**Year 3 / Level P**

For the Sandwich award - Optional placement year in industry

**Progression requirement**
Satisfactory completion of a minimum 30-weeks of work in industry

**Year 2 / Level I**

**Core units (Compulsory)**
- Commercial Business Environment (20)
- Group Project (20)
- Programming for Graphics & Games (20)
- Mobile Games Programming (20)
- AI Game Programming (20)
- Object Oriented Techniques (20)

**Progression Requirements**
120 Level I credits

**Exit Qualification:**
- Dip HE Games Technology
120 credits from each of the Levels I and C

**Year 1 / Level C**

**Core units (Compulsory)**
- Creative Business Awareness (20)
- Media Devices & Networks (20)
- Software Programming (40)
- Computer Graphics for Games (20)
- Game Production Techniques 1 (20)

**Progression Requirements**
120 Level C credits

**Exit Qualification:**
- Cert HE Games Technology
120 Level C credits

For the Sandwich award - Optional placement year in industry

Exemption is possible for those who provide an acceptable rationale for not undertaking the placement
9.5 MSc Digital Music & Audio Production

PROGRAMME DIAGRAM
MSc Digital Music & Audio Production

Core units (Compulsory)
Individual Masters Project (60)

Exit qualification: MSc Digital Music & Audio Production
Requires 180 Level M credits

Core units (Compulsory)
Research Methods (20)
Intellectual Property in the Digital Economy (20)
Digital Music Production (20)
Networked Audio (20)
Sound Aesthetics (20)
Computer Music Technology (20)

Progression requirements
120 Level M credits

Exit qualification: PG Cert Digital Music & Audio Production
Requires 60 Level M credits

Exit qualification: PG Dip Digital Music & Audio Production
Requires 120 Level M credits
9.6 MSc Computer Games Technology

PROGRAMME DIAGRAM

MSc Computer Games Technology

Core units (Compulsory)
Individual Masters Project (60)

Exit qualification: MSc Computer Games Technology
Requires 180 Level M credits

Core units (Compulsory)
Research Methods (20)
Game Analytics and Data Mining (20)
Game Development (20)
Advanced Games Programming
Mathematics for Games (20)
Game Physics and AI (20)

Progression requirements
120 Level M credits

Exit qualification: PG Cert Computer Games Technology
Requires 60 Level M credits

Exit qualification: PG Dip Computer Games Technology
Requires 120 Level M credits
10 ADMISSION REGULATIONS

The regulations for this framework are the University’s Standard Undergraduate Admission Regulations (the University Standard Admission Regulations are available on the BU Sharepoint site at https://intranetsp.bournemouth.ac.uk/Documents/arpptop.aspx), with the following exceptions:

Internal Progression:
Students who have successfully completed the Bournemouth & Poole College FdSc Computer Games Technology with an average mark of 60% will be eligible to apply for entry with advanced standing to Level H of the BSc (Hons) Games Technology at Bournemouth University and be credited with 120 credits at Level C and 120 credits at Level I.

Students who have successfully completed the Bournemouth & Poole College FdSc Music and Sound Technology with an average mark of 60% will be eligible to apply for entry with advanced standing to Level H of the BSc (Hons) Music and Audio Technology programme at Bournemouth University and credited with 120 Level C and 120 Level I credits.

Students who have successfully completed the Bridgwater College FdSc Creative Audio Technology with an average mark of 60% will be eligible to apply for entry with advanced standing to Level H of the BSc (Hons) Music and Audio Technology programme at Bournemouth University and credited with 120 Level C and 120 Level I credits.

Recognition:
Students who have successfully completed the BBSI (University Foundation course) in Science, Mathematics and IT with a minimum classification of 60% Credit profile, will be eligible to apply for entry without advanced standing to Level C BSc (Hons) Music and Audio Technology, BSc (Hons) Music and Sound Production, BSc (Hons) Games Technology, BSc (Hons) Games Programming

Further Recognition agreements were approved during the 2016/17 academic year. For further information, please consult the Recognition Register (I:\Academic Services\Collaborative\Recognition arrangements\MASTER Recognition Register.xlsx) for a full list of approved Recognition arrangements and agreed entry criteria.

Articulation:
Students who have successfully completed the Bournemouth University International College (Kaplan) Computing Pathway with a minimum of 50% course average and 60% in English will be automatically accepted for entry without advanced standing to Level C of BSc (Hons) Music and Audio Technology, BSc (Hons) Music and Sound Production, BSc (Hons) Games Technology, BSc (Hons) Games Programming
11 ASSESSMENT REGULATIONS

The regulations for this framework are the University’s Standard Undergraduate and Postgraduate Assessment Regulations. The University Standard Assessment Regulations are available on the portal at https://staffintranet.bournemouth.ac.uk/aboutbu/policiesprocedures/academicregulations/policiesprocedures1213/.
12 EDUCATION AND STUDENT EXPERIENCE PLAN (ESEP)

The Creative Technology framework is fully aligned with the five cross-school themes of the DEC ESEP, namely Partnership and Student Voice, Curriculum Architecture, Environment, Feedback and Assessment and, finally, Employability.

More details can be found in the DEC ESEP v3 document (see Appendix 5).
# 13 PROGRAMME PROFILES

## 13.1 BSc (Hons) Music & Audio Technology

Date Profile Completed: 01/13

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<th>Framework Title (in full):</th>
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| Programme HESA JACS code:  |                     |
| J930 J931 J950             |                     |

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BU Credit Structure & ECTS: Level H/6 120 (80 ECTS); Level I/5 120 (60 ECTS); Level C/4 120 (80 ECTS)
Originating Institution(s): Bournemouth University
School: DEC
Partner institution: N/A

Place(s) of Delivery: Bournemouth University
Framework Title (in full): Creative Technology Framework
Programme Award and Title: BSc (Hons) Music & Audio Technology
Interim Award and Titles & required credits:
- Cert HE Music Technology (Requires 120 Level C/4 credits)
- Dip HE Music Technology (Requires 120 Level I/5 credits and 120 Level C/4 credits)

Mode(s) of study: FTSW, FT
Expected Length of study:
FT = 3 years, FSW = 4 years

BU Credit Structure & ECTS:
- Level H/6 120 (60 ECTS);
- Level I/5 120 (60 ECTS);
- Level C/4 120 (60 ECTS)

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Contact in School: cgatzidis@bournemouth.ac.uk
Date approved: Oct 2013
Programme Specification version no.: v4.4
Placement: a minimum 30-weeks Optional 8 week placement
Diploma Supplement Statement regarding PRSB accreditation:

Name of Professional, Statutory or Regulatory Body (if appropriate): JAMES
# 13.2 BSc (Hons) Music and Sound Production Technology

**Date Profile Completed:** 01/13

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- **School:** DEC
- **Partner institution:** N/A
- **Programme HESA JACS code:** J930 J931 J950
- **Mode(s) of study:** FTSW, FT
- **Expected Length of study:** FT = 3 years, FSW = 4 years

**BU Credit Structure & ECTS:**
- Level H/6 120 (60 ECTS);
- Level I/5 120 (60 ECTS);
- Level C/4 120 (60 ECTS)

### Interim Award and Titles & required credits:
- **Cert HE Music Technology** (Requires 120 Level C/4 credits)
- **Dip HE Music Technology** (Requires 120 Level I/5 credits and 120 Level C/4 credits)

### Unit identification

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### Framework Title (in full):
Creative Technology Framework

### Programme Award and Title:
BSc (Hons) Music & Sound Production Technology

### Interim Award and Titles & required credits:
- **Cert HE Music Technology**
  - Requires 120 Level C/4 credits
- **Dip HE Music Technology**
  - Requires 120 Level I/5 credits and 120 Level C/4 credits

### Mode(s) of study:
- FTSW, FT

### Expected Length of study:
- FT = 3 years, FSW = 4 years

### BU Credit Structure & ECTS:
- Level H/6 120 (60 ECTS);
- Level I/5 120 (60 ECTS);
- Level C/4 120 (60 ECTS)

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**Effective from**
- **Yr. 1** Sept 2015
- **Yr. 2** Sept 2016
- **Yr. 3** Sept 2017
- **Yr. 4** Sept 2018

**Contact in School:**
- cgatzidis@bournemouth.ac.uk

**Date approved:**
- 10: Oct 2013

**Programme Specification version no.**
- 4.4

**Placement**
- A minimum 30-weeks
- Optional 8 week placement

**Diploma Supplement Statement regarding PRSB accreditation**
- n/a
13.3 BSc (Hons) Games Technology

Date Profile Completed: 01/13

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### BU Credit Structure & ECTS:

- Level H/6 120 (60 ECTS);
- Level I/5 120 (60 ECTS);
- Level C/4 120 (60 ECTS)

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Bournemouth University

### Place(s) of Delivery:
Bournemouth University

### Framework Title (in full):
Creative Technology Framework

### School:
DEC

### Partner institution:
N/A

### Programme HESA JACS code:
I610, I630

### Interim Award and Titles & required credits:
- **Cert HE Games Technology** (Requires 120 Level C/4 credits)
- **Dip HE Games Technology** (Requires 120 Level I/5 credits and 120 Level C/4 credits)

### Mode(s) of study:
FTSW, FT

### Expected Length of study:
FT = 3 years, FSW = 4 years

### BU Credit Structure & ECTS:
- **Level H/6:** 120 (60 ECTS);
- **Level I/5:** 120 (60 ECTS);
- **Level C/4:** 120 (60 ECTS)

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### Effective from
- **Yr. 1** 2015
- **Yr. 2** 2016
- **Yr. 3** 2017
- **Yr. 4** 2018

### Contact in School:
cgatzidis@bournemouth.ac.uk

### Date approved:
Oct 2013

### Programme Specification version number:
v4.4

### Placement:
a minimum 30-weeks optional 8-week placement

### Name of Professional, Statutory or Regulatory Body (if appropriate):
TIGA

### Diploma Supplement Statement regarding PRSB accreditation:
n/a
# 13.4 BSc (Hons) Games Programming

**Date Profile Completed:** 01/13

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Originating Institution(s): Bournemouth University

School: DEC

Place(s) of Delivery: Bournemouth University

Framework Title (in full): Creative Technology Framework

Programme Award and Title: BSc (Hons) Games Programming

Interim Award and Titles & required credits:
- Cert HE Games Technology
  (Requires 120 Level C/4 credits)
- Dip HE Games Technology
  (Requires 120 Level I/5 credits and 120 Level C/4 credits)

Mode(s) of study: FTSW, FT

Expected Length of study:
FT = 3 years, FSW = 4 years

BU Credit Structure & ECTS:
- Level H/6 120 (60 ECTS);
- Level I/5 120 (60 ECTS);
- Level C/4 120 (60 ECTS)

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Effective from: 2015

**Contact in School:** cgatigidis@bournemouth.ac.uk

**Programme Specification version no.:** v 4.4

**Date approved:** Oct 2013

**Placement:** a minimum 30-weeks

**Optional 8 week placement:**

**Name of Professional, Statutory or Regulatory Body (if appropriate):** n/a

**Diploma Supplement Statement regarding PRSB accreditation:** n/a
### 13.5 MSc Digital Music & Audio Production

**Date Profile Completed:** 01/13

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**Effective from:**

**Contact in School:** cgalzidis@bournemouth.ac.uk

**Date approved:** Oct 2013

**Programme Specification version:** no. 1: v2.1

**Placement:** n/a

**Yr. 1**

**Yr. 2**

**Yr. 3**

**Yr. 4**

**Diploma Supplement Statement regarding PRSB accreditation:** n/a
## 13.6 MSc Computer Games Technology

**Date Profile Completed:** 01/13

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### Place(s) of Delivery
- Bournemouth University

### Framework Title (in full):
- Creative Technology Framework

### Programme Award and Title:
- MSc Computer Games Technology

### Interim Award and Titles & required credits:
- PG Cert Computer Games Technology (requires 60 Level M/7 credits)
- PG Dip Computer Games Technology (requires 120 Level M/7 credits)

### Mode(s) of study
- FT, PT

### Expected Length of study
- FT = 1 year, PT = 2 years

### BU Credit Structure & ECTS
- Level M/7 180 (90 ECTS)

### Unit identification

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### Contact in School
- cgatzidis@bournemouth.ac.uk

### Date approved
- Oct 2013

### Programme Specification version
- v2.1

### Placement
- n/a

### Diploma Supplement Statement regarding PRSB accreditation
- n/a
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77
A Subject knowledge and understanding

A1. Principles and practices of creative music and audio technology systems

A2. Techniques for music and audio synthesis and processing

A3. Design and construction of computer programmes for mobile devices within a creative content

A4. Design and integration of music creation, recording, performance, duplication and delivery systems, for example in a studio environment

A5. Apply advanced technology for studio recording, editing, manipulation and production

A6. Business models, marketing, legal, ethics and professional media technology requirements

B Intellectual skills

B1. Creatively apply analysis, design, development and integration modelling concepts for the production of music and audio technology systems

B2. Elicit, organise and conceptualise requirements for music and audio technology systems by evaluation of context specific requirements

B3. Design infrastructures by selecting music and audio technology components to complete fully integrated systems
B4. Analyse and critically interpret experimental results to optimise performance

B5. Identify common aims and objectives to integrate music and audio processes with technical multimedia solutions

B6. Apply project management judgements taking account of aesthetics, ethics, sustainability, human factors, usability, reliability, costs, benefits, and risks.

C Subject specific / practical skills

C1. Create professional high performance music and audio systems

C2. Apply rational design methods to design and build sound technology systems

C3. Apply appropriate technology to implement a music and/or audio production

C4. Set up and optimise state of the art music and audio systems

C5. Build music and audio software systems appropriate to specified organisational requirements

C6. Apply the principles of project management to develop solutions systematically

D Transferable skills

D1. Structure, organise and use ideas creatively to communicate orally and in writing

D2. Plan, conduct and report on work within a set timeframe

D3. Work effectively, efficiently and ethically individually and in groups

D4. Learn collectively and independently with a critical viewpoint in a variety of familiar and unfamiliar organisational and technical situations
D5. Influence others creatively and constructively in seeking optimum solutions

D6. Work in a sustainable context while appreciating global perspectives and challenges
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81
A  Subject knowledge and understanding

A1.  Principles and practices of creative music and audio technology systems

A2.  Techniques for music and audio synthesis and processing

A3.  Production of music or audio in a variety of creative contexts in response to a creative brief

A4.  Design and integration of music creation, recording, performance, duplication and delivery systems, for example in a studio environment

A5.  Apply advanced technology for studio recording, editing, manipulation and production

A6.  Business models, marketing, legal, ethics and professional media technology requirements

B  Intellectual skills

B1.  Creatively apply analysis, design, development and integration modelling concepts for the production of music and audio technology systems

B2.  Elicit, organise and conceptualise requirements for music and audio technology systems by evaluation of context specific requirements

B3.  Design infrastructures by selecting music and audio technology components to complete fully integrated systems
B4. Critically appraise their creative output in response to the brief and discriminate between alternative arguments and approaches.

B5. Identify common aims and objectives to integrate music and audio processes with technical multimedia solutions

B6. Apply project management judgements taking account of aesthetics, ethics, sustainability, human factors, usability, reliability, costs, benefits, and risks.

C  Subject specific / practical skills

C1. Create professional high performance music and audio systems

C2. Apply rational design methods to design and build sound technology systems

C3. Apply appropriate technology to implement a music and/or audio production

C4. Set up and optimise state of the art music and audio systems

C5. Produce music and sound to a professional level.

C6. Apply the principles of project management to develop solutions systematically

D  Transferable skills

D1. Structure, organise and use ideas creatively to communicate orally and in writing

D2. Plan, conduct and report on work within a set timeframe

D3. Work effectively, efficiently and ethically individually and in groups

D4. Learn collectively and independently with a critical viewpoint in a variety of familiar and unfamiliar organisational and technical situations
D5. Influence others creatively and constructively in seeking optimum solutions

D6. Work in a sustainable context while appreciating global perspectives and challenges
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<td><strong>V</strong> CREATIVE BUSINESS AWARENESS</td>
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A Subject knowledge and understanding

A1. Principles and practices of creative game development
A2. Integration of graphics, sound and music components
A3. Principles and practices of human computer interaction for games
A4. Relationships between hardware and software architectures in game systems
A5. Principles/practices of asset/content creation for 2D/3D applications
A6. Business models, marketing, legal, ethics and professional games technology requirements

B Intellectual skills

B1. Creatively apply analysis, design, development and interaction modelling concepts for the production of game technology systems
B2. Elicit, organise and conceptualise requirements for game technology systems by evaluation of context specific requirements coupled with application of the de facto standards and methodologies employed within the industry
B3. Design infrastructures by selecting appropriate components to complete fully integrated media and game systems
B4. Analyse and critically interpret experimental results to optimise performance
B5. Identify common aims and objectives to integrate creative media and game processes for technical solutions

B6. Apply project management judgements that balance aesthetics, ethics, sustainability, human factors, usability, reliability, costs, benefits, and risks

C **Subject specific / practical skills**

C1. Create professional high performance game technology solutions

C2. Apply rational design methods to design and integrate game technology components

C3. Design and implement distributed game systems using state of the art game technology communication systems

C4. Build technical media systems appropriate to creative aesthetic requirements

C5. Apply human computer interaction algorithms in a completed prototype game scenario

C6. Apply the principles of project management to develop systems systematically

C7. Work effectively and efficiently in making a contribution as member of a team

D **Transferable skills**

D1. Structure, organise and use ideas creatively to communicate orally and in writing

D2. Plan, conduct and report on work within a set timeframe

D3. Work effectively, efficiently and ethically individually and in groups

D4. Learn collectively and independently with a critical viewpoint in a variety of familiar and unfamiliar organisational and technical situations
D5. Influence others creatively and constructively in seeking optimum solutions

D6. Work in a sustainable context while appreciating global perspectives and challenges
## APPENDIX 4 UNITS TO PROGRAMME OUTCOMES FOR GAMES PROGRAMMING

| | A1 | A2 | A3 | A4 | A5 | A6 | B1 | B2 | B3 | B4 | B5 | B6 | C1 | C2 | C3 | C4 | C5 | C6 | C7 | D1 | D2 | D3 | D4 | D5 | D6 |
| **L** | **INDIVIDUAL PROJECT** | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| **E** | **GRAPHICS AND COMPUTATIONAL PROGRAMMING** | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| **E** | **GAME ENGINE PROGRAMMING** | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| **L** | **INNOVATION AND BUSINESS DEVELOPMENT** | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| **L** | **GROUP PROJECT** | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| **E** | **AI GAME PROGRAMMING** | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| **V** | **OBJECT ORIENTED TECHNIQUES** | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| **E** | **MOBILE GAMES PROGRAMMING** | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| **L** | **PROGRAMMING FOR GRAPHICS AND GAMES** | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| **I** | **COMMERCIAL BUSINESS ENVIRONMENT** | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| **L** | **GAME PRODUCTION TECHNIQUES 1** | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| **V** | **CREATIVE BUSINESS AWARENESS** | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
A **Subject knowledge and understanding**

A1. Principles and practices of software engineering

A2. Integration of graphics, sound and music components

A3. Programming for/a contemporary game engine setting

A4. Relationships between hardware and software architectures in games programming

A5. Games programming techniques for a multitude of platforms and applications

A6. Business models, marketing, legal, ethics and professional games programming requirements

B **Intellectual skills**

B1. Design of games and software for games with the use of objected-oriented programming concepts

B2. Elicit, organise and conceptualise requirements for games programming by evaluation of context specific requirements coupled with application of the de facto standards and methodologies employed within the industry

B3. Design infrastructures by selecting appropriate components to complete fully integrated media and game systems

B4. Analyse and critically interpret experimental results to optimise performance
B5. Identify common aims and objectives to integrate creative media and game processes for technical solutions

B6. Apply project management judgements that balance aesthetics, ethics, sustainability, human factors, usability, reliability, costs, benefits, and risks

C Subject specific / practical skills

C1. Create professional high-performance games programming solutions

C2. Apply rational design methods to design and integrate game program components

C3. Design and implement distributed game systems using state of the art game technology communication systems

C4. Application of object-oriented programming techniques to contemporary game technology development

C5. Application of advanced rendering techniques for graphics and games

C6. Apply the principles of project management to develop systems systematically

C7. Work effectively and efficiently in making a contribution as member of a team

D Transferable skills

D1. Structure, organise and use ideas creatively to communicate orally and in writing

D2. Plan, conduct and report on work within a set timeframe

D3. Work effectively, efficiently and ethically individually and in groups

D4. Learn collectively and independently with a critical viewpoint in a variety of familiar and unfamiliar organisational and technical situations
D5. Influence others creatively and constructively in seeking optimum solutions

D6. Work in a sustainable context while appreciating global perspectives and challenges
APPENDIX 5 EDUCATION AND STUDENT EXPERIENCE PLAN (ESEP) VERSION 3

Bournemouth University
School of Design Engineering and Computing
Education and Student Experience Plan (ESEP)
(Version: 3)

Executive Summary

The DEC ESEP comprises five main themes and the significant achievements are as follows:

1. Partnership and student voice
We enhanced the partnership with our students by increasing our involvement with them throughout their academic journey. The new type of inductions has been successful and the PAL support received very good feedback. Our partnership with the Students’ Union and our Student Representatives allowed us to gather valuable feedback and to deliver the responsive learning experience and environment that students really value.

2. Curriculum architecture
We developed and enhanced our curriculum architecture in consultation with our students and Industry in order to deliver attractive and ‘relevant’ programmes. The key developments have been with the Computing, Psychology and the Creative Technologies frameworks. The first year curriculums are more engaging and we have already noticed a reduction of withdrawals. We have also further developed our widening participation activities.

3. Environment
We refurbished and created several areas in order to provide excellent and welcoming physical resources for teaching & learning. We established a clear physical presence for the School, to overcome the lack of School identity. Feedback from both students and staff on the new facilities is very positive.

4. Feedback and Assessment
We have investigated several avenues for enhancing the ‘feedback and assessment’ agenda. However, further work is required in order to develop sustainable and workable solutions. Furthermore, this activity will also take into account the outcomes of the internal paper “Principles of Good Feedback”.
5. Employability
Employability enhancement activities have now been embedded in all frameworks and there are wider opportunities at both undergraduate and postgraduate levels. We have widened the ‘employer engagement’ agenda by facilitating guest lectures, skills development, networking activities and alumni interaction.

Objective and Scope
The ESEP aims to enhance the student journey at BU. It replaces and incorporates the '100-day plans' and the previous Education Enhancement plans. It also brings together actions that are derived from other activities and reports.

Stakeholders
The main stakeholders are as follows:

- Students (via SUBU VP Education and AD Students Experience);
- Academics (via Framework Leaders and Teaching & Learning Officer);
- Administrators (via Academic Administrative Manager);
- Managers (via Associate Deans and DDE).

Key information
The ESEP is informed by several documents:

- BU Strategic Plan 2012-2018 (C1, C2, C4, C5, S1, S3, S4, I1 & I3)
- BU KPIs (KPIs 5 & 7, Pls 7, 8, 10, 11, 12, 15, 16, 17, 18, 19, 20 & 24)
- DEC Strategic Plan 2012-2018 (Sections 4.3, 4.4, 4.5 & 4.8)
- NSS Next 14 Steps document (Sections 2, 3, 4, 5, 6, 11 &12)
- NSS Scores 2012
- SES Scores 2012
- School Quality Report (to be issued in Nov 2012)
- ARPM/ARFMs
- External Examiners' responses 2011-12
Main themes
Initial analyses and discussions highlighted the following main themes:

1. Partnership and student voice
We will enhance the partnership with our students by increasing our involvement with them throughout their academic journey from application to graduation and beyond. Staff will engage with the PREP initiative in order to review and enhance the quality of the learning experience for students. The PAL support will be maintained and the induction will be more embedded within the curriculum in order to enhance the first year experience. We will encourage students to undertake extracurricular activities and engage with the BU Student Award. We will continue to foster our excellent relationship with the Students’ Union and our Student Representatives in order to gather valuable feedback and to deliver the responsive learning experience and environment that students really value.

2. Curriculum architecture
We will continue to develop and enhance our curriculum architecture in consultation with our students and Industry in order to deliver attractive and ‘relevant’ programmes. We will particularly strengthen their involvement in key points such as the assessment strategy, the number of contact hours, global citizenship and employability. Students will be able to participate in common cross-university units that are appropriately contextualised to their academic areas and professional support for student enterprise initiatives will be provided. The School will also continue to offer diverse and flexible modes of learning to attract students from less-traditional entry routes. In support of this we will strengthen and further develop relationships with partners regionally, nationally and internationally. We will also continue to develop our curriculum in consultation with our industrial and professional networks together with our research leaders.

3. Environment
We will continue to refurbish relevant floors of Poole House to provide excellent and welcoming physical resources for teaching & learning. We will establish a clear physical presence for the school, to overcome the lack of school identity experienced by our students and to avoid rising retention risk. We will enhance the 24hr access by developing an online system showing the potential access to facilities in real time (e.g. the availability of computers and rooms available for independent learning). We will investigate the use of ‘smart’ technology in order to enhance the communication between students, administrative and academic staff. We believe this will help to increase student satisfaction levels and staff engagement by reducing the number of emails and meetings.
4. Feedback and Assessment
We will use the opportunities afforded by CAS to create more frequent formative feedback across the Frameworks to students to raise students’ awareness of their own progress. Over the last few years we developed new forms of assessment and feedback that better incorporate the use of our virtual learning environment. We also encouraged the academic teams to blend the use of physical and virtual learning and social spaces in their educational activities. These initiatives increased student satisfaction and we will further develop our activities in this area. Staff will undertake development in e-learning in order to embrace the shift towards blended learning.

5. Employability
During the School’s curriculum reviews we ensured that employability enhancement activities were embedded in the frameworks. There are now wider opportunities at both undergraduate and postgraduate levels for students to engage with industrial placements. We will seek to expand the diversity and flexibility of industrial placements, both at home and overseas. We will also widen the ‘employer engagement’ agenda by facilitating guest lectures, company visits, skills development, networking activities and alumni interaction.

Tasks, Responsibilities and Timeframe
The main themes are divided into a series of discreet tasks/actions with clear responsibility and appropriate timeframes. See Appendix (not included in this Framework Specification document) for details.

Budget and Resources
The School recognises that these actions and activities require a great deal of time, motivation and effort from staff. They also require a dedicated budget and the School is fully committed to supporting these exciting initiatives in order to move the student experience agenda forward and give it the high prominence it deserves.

Risks
Three key risks have been identified:

1) Staff fail to engage with these initiatives;
2) Lack of budget and resources;
3) Limited staff time to commit to this, on top of their other responsibilities and duties.

The likelihood of these risks occurring is high and due to their scope it would be very difficult to mitigate against them.