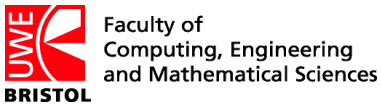


Faculty of Computing, Engineering & Mathematical Sciences

MSc Music Technology

February 2008

Programme Specification

Section 1: Basic Data

Awarding institution/body	University of the West of England
Teaching institution	University of the West of England
Faculty responsible for programme	Computing, Engineering and Mathematical Sciences
Programme accredited by	N/A
Highest award title	MSc Music Technology
Default award title	-
Interim award title	Postgraduate Diploma in Music Technology Postgraduate Certificate in Music Technology
Modular Scheme title (if different)	
UCAS code (or other coding system if relevant)	
Relevant QAA subject benchmarking group(s)	Engineering
On-going/valid until* (*delete as appropriate/insert end date)	
Valid from (insert date if appropriate)	1st September 2008

Authorised by… **Date:…**

Version Code 3

For coding purposes, a numerical sequence (1, 2, 3 etc.) should be used for successive programme specifications where 2 replaces 1, and where there are no concurrent specifications. A sequential decimal numbering (1.1; 1.2, 2.1; 2.2 etc) should be used where there are different and concurrent programme specifications

Section 2: Educational Aims of the Programme

The fundamental educational purposes of this programme are:

- the development of a critical approach to, and deep understanding of, **technology** which is applied to music and the sonic arts in general. This requires an extensive appreciation of both theoretical and practical elements of the analysis, design, development, evaluation, and synthesis of the technologies and techniques applicable to this area. It also demands a rigorous and critical approach to the context and philosophy of application of music technology systems;

- the development of understanding in **music and sonic art** which is mediated by technology. This requires a critical appreciation of the theoretical and practical elements of sound design, and the role and boundaries of music technology systems at the interface between artistic intent and sonic form;

- the development of postgraduate **research** skills applied to music technology. This requires understanding of both the application of theoretical methods, and the synthesis of innovative solutions to artistic and technological problems.

The general educational aims of the Faculty's taught postgraduate programmes are:

- to provide an intellectual experience of advanced study, underpinned by staff expertise, research, and experience;
- to enable the student to further and deepen his/her knowledge, understanding and analytical abilities in a stimulating and challenging academic environment;
- to prepare the student for further professional development in his/her chosen field;
- to develop the student's ability to conduct research in their chosen field;
- to offer postgraduate opportunities for part-time students in employment.

The additional specific aims of this programme are:

- to develop students' knowledge and understanding of the artistic and scientific elements of advanced music technology, both in theory and in practice;
- to enable students to explore the boundaries of knowledge in music technology, and develop skills in the use of technology to explore those limits;
- to advance students' comprehension and experience of the creative applications of music technology to address artistic and perceptual requirements;
- to extend students' skills in the analysis, design, development and evaluation of systems relating to the sonic arts which take account of practical limitations in technology, and the nature of human performance.

Section 3: Learning Outcomes of the Programme

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, intellectual skills, subject-specific skills and transferable skills, as shown below.

A. Knowledge and Understanding

Knowledge and Understanding of:	***Teaching/Learning Methods and Strategies***	***Assessment***
1. Key principles relevant to the analysis, design, development and evaluation of music technology systems. 2. Key principles in the research and creation of music and other sonic arts which are mediated by technology. 3. The professional and creative use of advanced recording and production techniques. 4. The subject of digital audio processing; analysis, modification, synthesis and control. 5. The relationship and connections between artistic intent, human-system interfaces, technological processes and sonic results. 6. Collaborative product development in technological disciplines. 7. Postgraduate research techniques in theory and practice, and current music technology research.	Knowledge and understanding is acquired through lectures, tutorials, seminars, practical sessions, group work and directed reading. There is a strong emphasis throughout on practice-based and research-based learning. Independent learning is achieved particularly when preparing written coursework, presentations and in the production of a dissertation. In terms of structure, the **core** contains six modules: 1. All modules require the student to develop ***theoretical understanding*** from written and other sources. Three modules have a strong taught theoretical element: Audio Processing: Systems & Practice; Sonic Design: Music, Art & Technology; Research Methods. 2. Five modules are concerned with ***application in practical contexts***: Audio Processing: Systems & Practice; Recording Projects; Sonic Design: Music, Art & Technology; Music Technology Group Project; Music Technology Project & Dissertation. 3. One module focuses on ***collaborative working and product development***: Music Technology Group Project. 4. Two modules have a strong ***research*** emphasis: Research Methods; Music Technology Project & Dissertation. The **option module** enables students to expand their understanding of particular areas of engineering related to music technology and its applications, but which have a more general scope.	Knowledge and understanding are assessed primarily through examinations, coursework, project reports and presentations. There is a strong emphasis throughout on assessment based on the results from practical investigations and projects. These relate to both the artistic and technological components of the programme. The general aim of assessment is to give students the opportunity to demonstrate their understanding in a detailed and reflective manner. It is also the case that activities leading to assessment contribute to the learning process and aid in the development of skills which are applicable in future occupations. Assessment also relates to skills concerning effective communication (written, oral, and musical).

B. Intellectual Skills

Intellectual Skills	*Teaching/Learning Methods and Strategies*	*Assessment*
Music Technology relates to a wide range of topics including musical practice and sonic design, auditory perception and acoustics, software engineering, user-centred design, and digital signal processing. Students are required to demonstrate a rigorous intellectual approach across the entire programme. In general terms, students must demonstrate intellectual skills including: 1. Critical thinking 2. Analysis 3. Synthesis 4. Evaluation and decision making 5. Creativity 6. Problem solving 7. Appreciation of context 8. Balancing conflicting objectives	Intellectual skills are developed in different ways in the curriculum, as described in the module specifications associated with this programme. In general: 1. Critical thought is developed with reference to both the artistic and scientific elements of the programme. For example, in such issues as the perceived quality of a musical result, as well as the most appropriate technology or process to achieve it. 2. The relationship between engineering processes and aural results is a key component of music technology. Students are required to analyse artistic and technological processes and their effects in depth. Such analyses are used to inform the creation of systems which achieve the desired sonic results. 3. There is an enormous quantity of literature and other sources of information associated with the topics which exist within the compass of music technology. Students are required not only to comprehend this information, but also to synthesise new understanding and develop new solutions to problems. 4. The evaluation of different techniques in different contexts is developed, which leads to students independently making informed decisions. This in turn should lead to effective development of solutions to problems and deeper understanding. 5. The development of creativity in the programme is both in the artistic domain (such as sonic design) and technology (in novel system design and implementation). 6. Problem solving is the foundation of the practical elements at the heart of the programme. In particular, students are required to explore beyond basic theory, to create more complex and tailored approaches suitable for particular situations. 7. The programme is designed not only to address the most obvious context for music technology (the sound recording studio) but also to consider a much wider range of application scenarios from medicine to art installations. This helps the students to develop understanding and apply techniques appropriate to particular contexts. 8. An understanding of the practicalities of implementation and the compromises that this involves is emphasised in a number of modules.	The assessment techniques employed in the programme provide opportunities for students to demonstrate their grasp of all the intellectual skills described in this section. The importance of practical application and research throughout the programme demands that these skills are developed if a student is to achieve a successful outcome. For example, in solving a problem in practice, a student must demonstrate not only that it can be proven to be an adequate solution, but also from which principles it is derived, how it compares to alternative techniques, the structure of the solution in artistic and scientific terms, its scope of application, and what limitations and compromises it involves. Critical reflection is also important to achieving continual intellectual progress.

C. Subject, Professional and Practical Skills

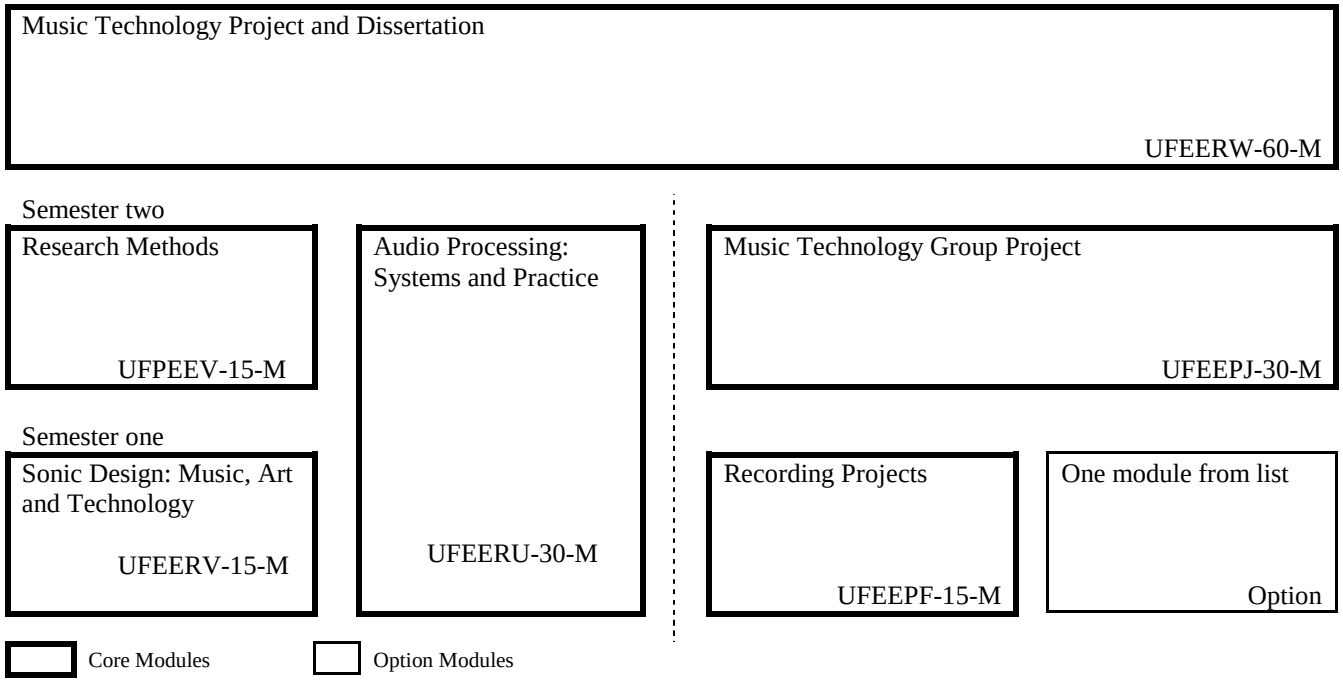
Subject/Professional/Practical Skills	*Teaching/Learning Methods and Strategies*	*Assessment*
From successful study of the core modules, students will gain skills in: 1. the application of music technology theory to practical situations, both artistic and scientific 2. the implementation of audio processing systems, linking engineering forms to auditory perception and musical practice 3. creatively using technology to explore the limits of understanding in the subject 4. the creation of music and other sonic arts 5. the use of audio recording technology in producing professional quality results in a wide variety of practical situations 6. software engineering and associated skills 7. product development as practised in small commercial organisations 8. research methods, and the design and execution of a research project The optional module allows students to add additional skills to the core music technology set. This has the benefit of broadening the expertise of the student, but also supporting their interests and personal development needs in particular topic areas. In turn these skills can be used in the Music Technology Project and Dissertation module to develop a particular area of research.	These skills are built progressively through the programme. Skills 1-3 are first established from an understanding of the theoretical aspects of music technology, and conventional techniques employed in implementing the theory in practice. Students then use this understanding to explore the artistic and scientific applications of music technology in practice. This helps the student to appreciate the limitations of basic approaches and so develop more complex techniques and context-specific solutions. Through research and synthesis of different concepts and techniques, students can then investigate the limits of current knowledge, and comprehend the relationships between engineering forms and auditory perception and musical/sonic art. Skills 4-7 relate to areas of understanding developed through practice. The students are required to achieve results in an organised manner based on established theory, experimental investigation, reflection, and learning from the professional experience of staff in these areas. Evaluation of alternatives, critical analysis of results, and creative experimentation are key parts of learning. Skill 8 is related to research. Learning from different sources of information, critical thinking, experimental investigation and reflection occur in many of the modules. These lead onto the Music Technology Project and Dissertation, which provides an opportunity to demonstrate sustained systematic investigation and development in a particular area of music technology.	Assessment of skills relating to creative thinking, evaluation, critical analysis and other forms of deeper understanding are partly assessed under controlled-conditions such as written and oral examinations. Many of these skills, however, are more extensively visible in the results of projects and coursework assignments where students are able to apply themselves over a substantial period of time. Projects and assignments also have a formative role in driving the learning process, where students develop their subject, professional and practical skills. These experiences also aid the development of related skills such as time management, task planning, technical writing, and working with written specifications. The Audio Processing: Systems and Practice module assesses skills 1, 2, 3 and 6 The Recording Projects module assesses skills 1, 4 and 5 The Research Methods module assesses skill 8 The Sonic Design: Music, Art and Technology module assesses skills 1, 3, and 4 The Music Technology Group Project assesses skills 1, 2, 6 and 7 Music Technology Project and Dissertation module assesses skills 1, 2, 3 and 8 Assessment of the option modules uses similar techniques to the core modules.

D. Transferable Skills and Other Attributes

Transferable Skills and Other Attributes	*Teaching/Learning Methods and Strategies*	*Assessment*
1. Communication skills**:** to communicate orally or in writing, including, for instance, the results of technical investigations, to peers and/or to "problem owners".	Skill 1 is developed through a variety of methods and strategies including the following: ♦ Participation in group discussions ♦ Oral, aural and visual presentations of research findings ♦ One-to-one discussions in individual tutorials ♦ Generation of written reports, project documentation, and a dissertation	All of the skills are demonstrated by the students throughout the programme, with varying degrees of emphasis (as described in the module specifications).
2. Self-management skills: to manage one's own time; to meet deadlines; to work with others having gained insights into the problems of team-based systems development.	Skill 2 is developed through a variety of methods and strategies including the following: ♦ Conducting self-managed and tutorial-based practical work ♦ Assignment and project work (as an individual) ♦ Project work involving team planning, as well as individual schedules within a project group	
3. IT Skills in Context (to use software in the context of problem-solving investigations, and to interpret findings)	Skill 3 is developed widely throughout the programme as IT is central to most teaching and learning activities.	
4. Problem formulation: To express problems in appropriate notations.	Skill 4 is developed through a variety of methods and strategies including the use of the following: ♦ Standard engineering/mathematical/computing constructs ♦ Audio processing modular design forms ♦ Musical notation and abstract notations to express concepts in nonformalised domains.	
5. Progression to independent learning: To gain experience of, and to develop skills in, learning independently of structured class work. For example, to develop the ability to use on-line facilities to further self-study.	Skill 5 is assumed to have been addressed to a significant extent at undergraduate level, but is further developed through students working with minimal or no supervision, including independent research, practical and project work.	
6. Comprehension of professional literature: to read and to use literature sources appropriate to the discipline to support learning activities.	Skill 6 is developed through a variety of methods and strategies including the following: ♦ Directed literature study ♦ Research activities, including critical evaluation of different sources of information ♦ Study of non-academic literature relating to commercial products ♦ Use of engineering documentation such as programming manuals	
7. Working with Others**:** to be able to work as a member of a team; to be aware of the benefits and problems which teamwork can bring.	Skill 7 is developed through a variety of methods and strategies, but particularly in the Music Technology Group Project which includes activities such as: ♦ Planning as a group ♦ Working together toward a common goal, and dealing with problems within the group ♦ Working in a multi-disciplinary environment	

Section 4: Programme Structure for MSc Music Technology

This structure is indicative and subject to change



Part-time students in year one take modules to the left of the dotted line and in year two to the right of the dotted line

Option taken from			
UFEE7K-15-M	Intelligent & Adaptive Systems	UFEE7H-15-M	Communication Networks and Protocols

PLEASE NOTE: REFER TO THE FACULTY ON-LINE INFORMATION SYSTEM FOR UP-TO-DATE STRUCTURE INFORMATION:
http://www.cems.uwe.ac.uk/exist/index.xql

Section 5: Entry Requirements

The University's general requirements for entry to a postgraduate programme apply to this programme and are described in the University Academic Regulations. These are available from the UWE web site, or on request. In addition, an Honours degree in Music Technology/Systems, Electronics, Computing, or a similar subject will normally be required. Applicants with first degrees in other disciplines may be considered if they have relevant professional experience of sufficient depth.

Section 6: Assessment Regulations

The Modular Assessment Regulations apply to this programme.

Section 7: Student Learning: Distinctive Features and Support

Class Activities The mode of delivery of a module is determined by its Module Leader. Students will experience a combination of learning activities such as lectures, tutorials, seminars, practical classes, group activities and individual project work. There is a particular emphasis on the practical application of theory: For example, problem solving, experimentation, artistic technique, creative design, project work and engineering development. These develop both the higher intellectual skills of the student and a deeper level of understanding of the subject area. The Faculty's specialised music technology teaching, studio and research facilities are ideally suited to the teaching and learning methods described.

Academic Support Academic advice and support is the responsibility of the staff delivering the module in question. Staff are expected to be available outside normal timetabled hours, either by appointment or during published "surgery" hours, in order to offer advice and guidance on matters relating to the material being taught and on its assessment.

Pastoral Care The Faculty offers pastoral care through its Student Advisers, a team of staff who provide comprehensive, full-time student support service on a drop-in basis or by appointment. All students on the same route are allocated to the same Adviser, who is trained to provide advice on matters commonly of concern, including regulatory and other matters; the Adviser will, when necessary, advise the student to seek advice to from other professional services including the University's Centre for Student Affairs or from members of academic staff.

Progression to Independent Study

Many modules require students to carry out independent study, such as research for projects and assignments, and a full range of facilities are available at all sites to help students with these. The philosophy is accordingly to offer students both guided support and opportunities for independent study. Guided support, mainly in the form of timetabled sessions, takes the form of lectures, tutorials, seminars and supervised practical sessions. Students are expected to attend all sessions on their timetable.

The progression to independent study will also be assisted by the nature of the support offered in individual modules. Typically, module leaders will provide a plan for the module indicating the activities to be carried out and the forms of learning to be undertaken during the delivery of the module, with a view to encouraging students to plan ahead and to take responsibility for managing their time and resources.

Computing and Other Facilities The Faculty offers specialised computing facilities alongside the general University provision. In particular, the music technology facilities have an extensive Apple Macintosh network which is used for a wide range of activities including studio recording, software programming, multimedia projects, audio research work, taught practical sessions, and document preparation. The Faculty also has nine general PC computing laboratories of 20 plus seats all running Microsoft Windows, along with four Unix based laboratories and other specialist computing labs. Some areas are not timetabled in order that students can access machines at all times during opening hours.

The Faculty's recording studios include three control rooms and three associated performance and experimental practice areas. These contain a wide range of analogue and digital equipment suitable for the creation of professional quality results and conducting high quality research. The studios are supplemented by a suite of rooms for individualised audio and media learning, as well as other associated spaces.

Staff dedicated to the music technology and multimedia facilities ensure reliable operation and are trained to provide user support for the complex specialised equipment. The Faculty also provides user support from the computing Helpdesk. The Helpdesk provides first line support to the user base, uniquely supported by both permanent staff and experienced students (employed on a part time basis) until 20.00hrs every day. Technical staff are also available to help with other forms of engineering problems such as electronic, mechanical and fabrication with different materials.

Section 8 Reference Points/Benchmarks

A variety of reference points, both internal and external, have been of use in the planning and design of this scheme. The chief ones are as follows:

1. The Faculty's previous experience of offering postgraduate schemes over a number of years
2. The QAA "Framework for Higher Educational Qualifications"
3. The QAA Subject Benchmark Statements, particularly that for Engineering
4. The Faculty's mission statement
5. The Faculty's policies regarding teaching, learning & assessment
6. Staff research and subject expertise

The QAA Framework for Higher Educational Qualifications

The Faculty supports the definition of Masters level contained in the framework in terms of the levels of understanding and of cognitive and other skills required of students. The educational aims and the framework for learning outcomes of this programme, as outlined earlier in this document, are consistent with the framework. For example, that students must understand the subject in depth, be aware of the most recent developments, show critical thinking and demonstrate research abilities, and be able to apply originality in approaching problems. The programme balances the twin aims of achieving subject-specific understanding, as well as the development of skills and knowledge suitable for a broad range of application contexts. This enables the students to be prepared for both non-academic and academic occupations afterwards.

QAA Subject Benchmark Statements

The QAA benchmarks are useful statements of the levels of achievement expected of honours graduates and therefore of potential entrants to Masters Schemes. Faculty Masters programmes are designed to build upon these, in terms of content as well as in terms of skill levels. It is assumed that entrants onto this programme have the skills described in the Engineering Benchmark Statement in particular, which is the foundation for the higher learning aims described earlier in this document. Music technology is a cross-disciplinary area of study, which means that some elements of the Computing and Music benchmark statements are also related to this programme.

The Faculty's Mission Statement

The Faculty's vision and mission statement includes a number of important aspirations which are supported by this programme, including:

1. redefining subject boundaries and creating new holistic and multidisciplinary approaches
2. providing opportunities for students of all ages and backgrounds to develop their full potential through educational experiences that are challenging and stimulating.
3. understanding the relationship between social and human need and the capabilities of technology
4. applying technology in novel fields and contexts.

The Faculty's Teaching, Learning & Assessment Strategy

The Faculty's TL&A strategy includes a number of important aspirations for student learning which are supported by this programme, including:

1. a student-centred approach to teaching
2. the development of student skills for research and inquiry as a major part of student learning
3. an educational experience that gives students a capacity to think critically and analytically, good interpersonal skills, subject knowledge and understanding, ethical awareness, and the ability to take responsibility for their own future learning

4. the encouragement of a culture and practice of independent learning, to enable students to learn how to learn
5. supporting a diversity of student backgrounds
6. innovation in the curriculum to produce programmes which have relevance in the rapidly changing world of technology

Students are encouraged throughout this programme to develop their abilities in research, experimentation, and critical thought, such that they become successful independent learners. The modules are designed to expand student skills in a range of areas such that by the end of the programme they are capable of driving their own learning process in the area of music technology and beyond. The modules cover a range of topics and learning styles, involving both artistic and scientific elements, solo and group activities, theoretical and practical investigation, supervised and self-directed learning, subject-specific and general skills. The programme enables students from a wide range of backgrounds to achieve understanding in those programme aspects that are both familiar and those which are less so.

Staff research and subject expertise

The modules which have been specifically created for this programme (Audio Processing: Systems & Practice; Recording Projects; Sonic Design: Music, Art & Technology; Music Technology Group Project; Music Technology Project & Dissertation) have been developed in part from existing successful undergraduate and postgraduate modules. The staff have used many years of professional practice, research and teaching experience in the development of the modules and programme in general. The other modules in the programme have all been used in other programmes over a number of years. Additionally, active practitioners from outside the University are used as lecturers and tutors in some modules to provide further experience and expertise to teaching.