



## ACADEMIC SERVICES

### PROGRAMME SPECIFICATION

<b>Awarding Institution</b>	University of the West of England, Bristol	
<b>Teaching Institution</b>	University of the West of England, Bristol	
<b>Delivery Location</b>	Frenchay and Glenside Campuses	
<b>Faculty responsible for programme</b>	Health and Applied Sciences	
<b>Department responsible for programme</b>	Biological, Biomedical and Analytical Sciences	
<b>Modular Scheme Title</b>		
<b>Professional Statutory or Regulatory Body Links</b>	Forensic Science Society	
<b>Highest Award Title</b>	MSc Advanced Forensic Analysis	
<b>Default Award Title</b>		
<b>Fall-back Award Title</b>		
<b>Interim Award Titles</b>	PGCert Advanced Forensic Analysis PGDip Advanced Forensic Analysis	
<b>UWE Progression Route</b>	N/A	
<b>Mode(s) of Delivery</b>	FT /PT /	
<b>Codes</b>	<b>UCAS:</b> F41A12	<b>JACS:</b> C980
	<b>ISIS2:</b> F41A12	<b>HESA:</b>
<b>Relevant QAA Subject Benchmark Statements</b>	Forensic Science, Chemistry, Biosciences.	
<b>CAP Approval Date</b>	28/03/2014	
<b>Valid from</b>	September 2012	
<b>Valid until Date</b>	September 2018	
<b>Version</b>	1.1	

### Part 2: Educational Aims of the Programme

#### Broad Aims:

This programme is designed to offer an advanced, flexible professional educational programme in the main areas of forensic science. The design of the programme enables the student to:

- study more advanced aspects of forensic science from scenes of crime issues, through laboratory analysis to court room presentations;
- pursue an in-depth knowledge of analytical themes in chemical and biological science

## Part 2: Educational Aims of the Programme

which are both appropriate to forensic science and which also underpin a variety of other emerging areas of scientific work;

- develop advanced knowledge, understanding and skills to produce new ideas, concepts and solutions;
- develop research skills; specifically advanced analysis, collection and interpretation of data and production of publishable standard of work.
- apply their learning in the workplace or to further education;
- acquire and apply a wide range of appropriate professional skills;
- pursue advanced level learning for career development in forensic science;
- develop autonomy in the learning process and to become effective self-directed learners;
- achieve a high level of presentation and defence of own work.

### Specific aims:

The programme specifically aims to provide the educational and resource environment which will enable students with a background in forensic science at degree level or equivalent to :-

- acquire an in depth and advanced knowledge of the current concepts and approaches to all main areas of forensic science;
- develop the ability to critically assess the methods and concepts at an advanced level in relation to all main areas of forensic science;
- develop practical skills in all main areas of forensic science and study in depth an area of choice in forensic science through a research project;
- equip students with transferable professional and practical skills appropriate to a career in forensic science and allied disciplines.

### **Programme requirements for the purposes of the Higher Education Achievement Record (HEAR)**

*Include a brief statement of any particular features that help define the qualification, especially information on the requirements for successfully passing it. Include learning outcomes, skills, attributes and knowledge associated with the programme of study. The statement should not exceed 100 words. The statement should be phrased appropriately for an external audience as this is extracted and added to the HEAR Certificate.*

### Part 3: Learning Outcomes of the Programme

The award route provides opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas:

<i>Learning Outcomes:</i>	<b>USSKCB-30-M</b>	<b>USSJRX-30-M</b>	<b>USSJRY-30-M</b>	<b>USSKM3-30-M</b>	<b>USSJ6C-60-M</b>
<b>A) Knowledge and understanding of:</b>					
The scope and nature of forensic evidence from a variety of complex scenes and sources.	x	x	x		
The current concepts and developments within the forensic field :- i) innovative techniques used in crime scene investigation. ii) specialist equipment and principal laboratory methods routinely used in forensic science. ii) evaluation and interpretation of complex evidence types.	x	x	x		
The role of research in furthering knowledge and understanding	x	x	x	x	x
Methods of acquiring, interpreting and analysing information and data with a critical understanding of the appropriate contexts for their use in practice;	x	x	x	x	x
The use of research and practice-based inquiry to create, interpret and apply knowledge in the context of forensic science and other scientific disciplines.	x	x	x	x	x
<b>(B) Intellectual Skills</b>					
Students will develop an ability to:					
Critically evaluate and select appropriate strategies for crime scene examination;			x		
Critically evaluate and select appropriate strategies/ techniques for the examination of many types of forensic evidence;	x	x	x		
Interpret and evaluate complex scenes/ evidence and report on them appropriately;	x		x		
Critically assess, present and discuss primary reference source material;				x	x
Apply relevant advanced numerical skills (including statistical analysis where appropriate) to data sets;	x	x		x	x
Develop strategies for updating, maintaining and enhancing their knowledge of forensic science;	x	x	x	x	x
Analysis of data gained though practical research					x
Ability to critically evaluate current research and advanced scholarship.	x	x		x	x
Learning through reflection on practice and experience.					
Ability to construct reasoned arguments to support their position on the ethical and social impact of advances in forensic science.				x	x

### Part 3: Learning Outcomes of the Programme

<b>(C) Subject/Professional/Practical Skills</b>					
<i>A successful candidate will be able to:</i>					
Demonstrate a clear and in-depth understanding of a wide range of forensic techniques;	x	x	x		
Show familiarity with the operation and uses of advanced equipment,	x	x			x
critically analyse and present experimental data;					
Demonstrate an in-depth understanding of research processes;				x	x
Demonstrate an advanced understanding of a wide range of practical techniques and skills relevant to current forensic science practices;	x	x	x	x	x
Demonstrate skills in both oral and written scientific communication relevant to forensic science;	x				x
Plan, execute and present an independent piece of work, in which skills such as time management, problem solving and independence are evident.	x				x
<b>(D) Transferable skills and other attributes</b>					
<i>A successful candidate will be able to:</i>					
Work effectively within a group taking on a variety of roles;	x	x	x		
Utilise and develop extensive skill in using a variety of learning resources;	x	x	x	x	x
Undertake self reflection and to reflect on others, providing constructive feedback;				x	x
Undertake independent research to a high standard;					x
Demonstrate independent and self critical learning;	x				x
Engage confidently in academic and professional communication;	x			x	x
Understand and analyse different types of scientific data;	x	x		x	x
Disseminate and communicate findings both written and orally;	x				x
Design and justify research to meet a wide range of objectives;					x
Communicate clearly across a range of mediums to a wide variety of audiences;					x
Write clearly, succinctly and appropriately;	x		x		
Self-direct and demonstrate originality in tackling and solving problems;	x		x	x	x
Communicate effectively in a range of contexts;				x	x
Apply IT skills in professional and technical practice.	x	x		x	x

### Part 4: Student Learning and Student Support

**Teaching and learning strategies to enable learning outcomes to be achieved and demonstrated**

#### Professional Accreditation

The programme is currently accredited by the Forensic Science Society. The Forensic Science Society is the professional body which operates an accreditation scheme for university courses in forensic science which requires knowledge of its three component standards – (1) Crime Scene Investigation, (2) Laboratory Analysis and (3) Interpretation, Evaluation, and Presentation of

## **Part 4: Student Learning and Student Support**

Evidence. Students may join The Forensic Science Society as student members.

### **Laboratory resources**

The Faculty has a well-equipped range of general laboratories, specialised scientific equipment and specialist facilities appropriate for teaching and research in all aspects of forensic science. Support for laboratory-based scientific inquiry is enhanced by the compulsory Research Methods and Practical Skills module. Students develop a range of key skills required of a scientist, including systematic literature searches, critical review, research methodology and design, statistical and data handling, problem-solving, and IT.

### **Learning and teaching strategy**

At UWE Bristol, the learning and teaching strategy includes a range of face-to-face activities, in addition to online learning and independent learning that enable the learning outcomes to be achieved and demonstrated. The following activities take place:

- 1) Scheduled learning - lectures, seminars, tutorials, project supervision and practical classes.
- 2) Independent learning – students are provided with essential reading and online supplementary materials, including virtual learning environments and are supported in their academic development through formative assessment, assignment preparation and completion. Students are encouraged to develop their scientific interests by attending departmental research seminars and external events.

### **Students with specialist needs**

Student Services at UWE, Bristol support and guide students on a range of non-curricular issues including welfare, disability and psychological support and counselling. Students with disabilities or learning differences are needs assessed, and any specific learning support measures can be implemented e.g. in the classroom or examinations, and through support of the programme team.

### **Library and technology enhanced learning**

The library at Frenchay campus provides an extensive range of literature for the programme, and students have support from a subject-specific librarian. Students have 24-hour access to computers, and IT support services are available from the University's Computing Helpdesk.

### **Description of any Distinctive Features**

This is an advanced academic programme that provides for the development of new knowledge, skills and techniques in forensic science in a supportive learning environment. Delivery of the programme utilises the wide range of expertise of academics and professionals from the Faculty of Health and Applied Sciences and external specialists. It also provides the student with the opportunity to gain advanced hands-on experience of the latest equipment used in many forensic labs and the opportunity to experience crime scene examination with a dedicated crime scene house, which is fully fitted with CCTV equipment enabling an excellent student learning experience. This is coupled with a garage and garden for simulating vehicular and outdoor crime

#### Part 4: Student Learning and Student Support

scenes.

Programme flexibility occurs through provision of a choice of project topics enabling students to enhance skills in areas they wish to develop. These can be undertaken in the laboratories on campus or on placement with one of the police forces/ forensic providers. Flexibility is further provided through a modular programme that provides qualifications from a Postgraduate Certificate, to a Postgraduate Diploma, to a Masters Degree and through optional modes of study as full-time or part-time students. The programme is especially suited to forensic scientists wishing to extend their expertise and knowledge of this field of science. A successful outcome should enhance an individual's opportunities to apply for a range of scientific positions within the forensic science sector and/or move into an appropriate PhD programme.

The Faculty has a longstanding investment in web-based support for teaching and learning with a learning technologist team working alongside academic staff. Open educational resources (part of the UKOER Programme of initiatives) are embedded into the new "refresh" curricula, particularly in supporting the acquisition of laboratory skills prior to students going into the lab (e.g. Virtual Analytical Laboratory).

In addition to our crime scene facility, training in crime scene investigation is aided by the use of Second Life as a VLE. A crime scene has been built in Second Life for use with this degree programme and students will first access these in synchronous sessions with staff, and later be able to use as much as desired to practise and enhance their learning.

#### Part 5: Assessment

A: Approved to [University Regulations and Procedures](#)

##### **Assessment Strategy**

Assessment strategy to enable the learning outcomes to be achieved and demonstrated:

One of the four ambitions of the new UWE 2020 Strategy is to become the best university for:

*"Professionally recognised and practice-oriented programmes, which contribute to an outstanding learning experience and generate excellent graduate employment opportunities and outcomes for all students".*

(<http://www1.uwe.ac.uk/aboutus/visionandmission/strategy.aspx>)

##### **Subject knowledge and understanding:**

Gained through face-to-face and independent learning opportunities, subject knowledge will be assessed through coursework, examinations and laboratory tasks. Activities include research data analysis; desk top research, scientific writing and oral communication. Methods are specified in each module guide and are varied and designed to test the learning outcomes.

##### **Intellectual skills and ability:**

Through a range of formative and summative assessment opportunities, the student develops intellectual skills demonstrating subject and research understanding, critical thinking and problem solving.

##### **Transferable Skills and other attributes**

Students develop transferable skills (independent learning, IT, time management, literacy,

## Part 5: Assessment

numeracy and reflective practice) within each module. Through formative assessment, students develop skills of the reflective practitioner, and coursework feedback builds confidence and independent learning. Assessments include individual activities – essays, case studies, oral presentations, or can be group work – practicals, presentations. IT skills are honed through online assessment and data analysis tasks. All are honed through the independent research project, where students are encouraged to manage their own time and objectives.

### Assessment Map

The programme encompasses a range of **assessment methods** including written exams, oral presentations and practical assessments. These are detailed in the following assessment map:

#### Assessment Map for *MSc Advanced Forensic Analysis*

	Unseen Written Exam	Practical Exam	Practical Skills Assessment	Oral assessment and/or presentation	Written Assignment	Report / Project	Dissertation
USSKCB-30-M Forensic Biology and Genetics	A (50)			B (15)	B (35)		
USSJRX-30-M Forensic Analysis and Toxicology	A (50)				B (50)		
USSJRY-30-M Advanced Crime Scene Science	A (50)	B (50)					
USSKM3-30-M Research Methods and Practical Skills	A (35)		B (32.5)		B (32.5)		
USSJ6C-60-M Research Project				A (20)		A (20)	A (60)

\*Assessment should be shown in terms of either **Written Exams**, **Practical exams**, or **Coursework** as indicated by the colour coding above.

## Part 6: Programme Structure

This structure diagram demonstrates the student journey from Entry through to Graduation for a typical **full time student**, including: level and credit requirements, interim award requirements module diet, including compulsory and optional modules

ENTRY	Year 1	Compulsory Modules	Optional Modules	Interim Awards	
		USSKCB-30-M Forensic Biology and Genetics	None		<u>PG Cert in Advanced Forensic Analysis</u> <ul style="list-style-type: none"> <li>• Credit requirements 60 credits</li> </ul>
		USSJRX-30-M Forensic Analysis and Toxicology			
		USSJRY-30-M Advanced Crime Scene Science			
		USSKM3-30-M Research Methods and Practical Skills			
		USS6C-60-M Research Project			
			<u>PG Dip in Advanced Forensic Analysis</u> <ul style="list-style-type: none"> <li>• Credit requirements 120 credits</li> </ul>		

### Part time:

The following structure diagram demonstrates the student journey from Entry through to Graduation for a typical **part time student**.

ENTRY	Year 1	Compulsory Modules	Optional Modules	Interim Awards	
		USSKCB-30-M Forensic Biology and Genetics	None		<u>PG Cert in Advanced Forensic Analysis</u> <ul style="list-style-type: none"> <li>• Credit requirements 60 credits</li> </ul>
		USSJRY-30-M Advanced Crime Scene Science			
		USSKM3-30-M Research Methods and Practical Skills			



ENTRY	Year 2	Compulsory Modules	Optional Modules	Interim Awards
		USSJRX-30-M Forensic Analysis and Toxicology	None	<u>PG Dip in Advanced Forensic Analysis</u> • Credit requirements 120 credits
		USS6C-60-M Research Project		

### Part 7: Entry Requirements

The programme has been specifically designed for graduates from Forensic Science programmes accredited by the FSSoc (in CSI, Lab analysis and IEFE) and such graduates (with a minimum of a 2:2 classification) can be accepted directly onto the programme. Graduates from other programmes (either non-accredited programmes or related science disciplines such as Chemistry or Biology) will need to contact us to agree a programme of study prior to commencing this MSc course. Materials will be made available in a variety of forms, from directed reading to online simulations, and students may also be required to complete additional practical sessions at UWE to gain necessary skills.

\*Full accreditation means in all three main component standards.

### Part 8: Reference Points and Benchmarks

This specification sets out how external and internal reference points have been drawn upon in programme design.

QAA reference points

The programme has been developed in accordance with QAA statements on postgraduate qualifications, and in relation to QAA Masters level descriptors (March 2010) and the structure of the proposed degree is fully consistent with the QAA position statement on postgraduate qualifications.

**External reference points** are government and industry development policy and research priorities.

Specifically:-

- Increased demand for forensic qualifications/research by industry and graduates of forensic science undergraduate courses.
- Faculty external activities and links to forensic analysis providers and forensic suppliers such as, Mass Spec Analytical, LGC forensics and Orchard Cellmark

**Internal reference points** are the programme teams expertise, experience and professional links.

Specifically:-

- HAS development of postgraduate provision, supported by the Faculty Graduate School

## Part 8: Reference Points and Benchmarks

and postgraduate study facilities.

- HAS academic strengths in the current issues areas which are in demand for advanced knowledge and skill development in all aspects of Forensic Science.
- HAS applied interdisciplinary research, consultancy and professional practice. This includes work with national and regional government agencies, the professions, business and industry. For example: Mass Spec Analytical and Avon and Somerset Police.

### University teaching and learning policies

In line with the universities teaching and learning policies, this programme takes a student-centred approach to learning by allowing students to take control of aspects of their learning and providing a learning environment that stimulates active engagement and participation. The programme seeks to create an environment that will stimulate students to take responsibility for aspects of their learning, while the module team facilitate this learning. Module learning outcomes have been designed to ensure that students meet the overall programme learning outcomes on completion of the programme.

A variety of assessment methods are incorporated within the programme to cater for a diversity of approaches to learning. The programme teams recognise the importance of both summative and formative assessments and feedback as an integral part of the learning teaching process. All assessments comply with university assessment regulations, in line with this the MSc will be awarded to students who can demonstrate:

systematic understanding of knowledge, and a critical awareness of current problems and/or new insights, much of which is at, or informed by, the forefront of their academic discipline, field of study, or area of professional practice;

comprehensive understanding of techniques applicable to their own research or advanced scholarship;

originality in the application of knowledge, together with a practical understanding of how established techniques of research and enquiry are used to create and interpret knowledge in the discipline;

conceptual understanding that enables the student:

- to evaluate critically current research and advanced scholarship in the discipline; and
- to evaluate methodologies and develop critiques of them and, where appropriate, to propose new hypotheses.

Holders of the qualification will be able to demonstrate skills that:

deal with complex issues both systematically and creatively, make sound judgements in the absence of complete data, and communicate their conclusions clearly to specialist and non-specialist audiences;

demonstrate self-direction and originality in tackling and solving problems, and act autonomously in planning and implementing tasks at a professional or equivalent level;

continue to advance their knowledge and understanding, and to develop new skills to a high level and will have the qualities and transferable skills necessary for employment requiring:

- the exercise of initiative and personal responsibility;
- decision-making in complex and unpredictable situations;
- the independent learning ability required for continuing professional development.

### Subject benchmark statements

Owing to its interdisciplinary nature, this programme draws on several subject benchmark

## Part 8: Reference Points and Benchmarks

statements for guidance.

### Forensic Science Benchmarking

The specific requirements for forensic science have been informed by the knowledge and experience of staff that have been trained, and are professionally active, in this rapidly developing field. Benchmarking for forensic science has however been derived from the accreditation standards of the Forensic Science Society. In addition, elements of the chemistry and bioscience benchmarks are relevant for the analytical aspects of forensic science. QA benchmarking for forensic science are under development in conjunction with the forensic science society.

### Chemistry Benchmarking

As chemistry only forms part of the programme, only some of the main aims of chemistry benchmarking are relevant:

To develop in students the ability to apply their chemical knowledge and skills to the solution of (*theoretical and*) practical problems in chemistry.

To develop in students, through an education in chemistry, a range of transferable skills, of value in chemical and non-chemical employment.

The focus of this programme is on the practical application of chemistry to forensic science, and hence does not develop the same depth of theoretical understanding (*italicised above*) as a full postgraduate chemistry course.

Likewise this programme covers a sub-set of the subject knowledge expected of a masters level chemistry programme:

The principles and procedures used in chemical analysis and the characterisation of chemical compounds.

The principal techniques of structural investigations, including spectroscopy.

The nature and behaviour of functional groups in organic molecules.

The selection, preservation and analysis of specimens in forensic toxicology.

Most of the Abilities and Skills, Chemistry-related Practical Skills and Transferable Skills, identified by the Quality Assurance Agency for Higher Education for chemistry are equivalent to the Subject/Professional/Practical and Transferable Skills that define this programme.

### Bioscience Benchmarking

Bioscience benchmarking for Subject Knowledge adopts more inclusive statements implying a broad knowledge across the whole subject, which does not mirror the more focused and practical approach in this programme. The programme draws on the following statements:

...together with specialised in-depth study (often career-related) of some aspects of the discipline or subject area. ....

understanding of information and data, and their setting within a theoretical framework.....;

Familiarity with the terminology, nomenclature and classification systems as appropriate;

Methods of acquiring, interpreting and analysing biological information with a critical understanding of the appropriate contexts .....

Knowledge of a range of practical and presentational techniques and methodologies relevant to the particular discipline, including data analysis and the use of statistics.

The Generic, Intellectual, and Practical Skills, that are not strongly subject-dependent, also map well to the Intellectual Skills and Subject/Professional/Practical Skills of this programme, e.g.

The capacity to give a clear and accurate account of a subject, marshal arguments in a mature way and engage in debate and dialogue both with specialists and non-specialists;

The ability to employ a variety of methods of study in investigating, recording and analysing material.

The Bioscience benchmarking of Transferable Skills mirrors the main issues identified in the

## Part 8: Reference Points and Benchmarks

other subject areas.

### Research carried out by staff

Staff in the Faculty of Health and Applied Sciences are research and consultancy active and consequently programme development, formal teaching and project work is underpinned and informed by current work. Staff contributing to the programme have an established record in supervising postgraduate research-based projects, and students may have the opportunity to carry out their projects working alongside research staff at post-doctorate level. Furthermore, there is on-going interdisciplinary research and practice which is encouraged and maintained by Faculty Research Centres and Groups.

Research and consultancy is undertaken in the following areas of particular relevance to forensic science:-

- Optimisation of VMD as a technique for the development of fingerprints on difficult substrates and identification of sources of touch DNA for use in forensic casework (Knowledge Transfer Partnership project with industry).
- chemical sensors for drugs and arson accelerants
- improvements of MSMS methods used in the detection of illicit drugs
- forensic entomology
- factors affecting the efficacy of fingerprint development methods
- elemental composition of soil

Some projects are carried out with regional forensic science companies or police forces.

Research specifically in forensic science topics is also supported by a wide range of other research interests across numerous biological and chemical fields.

Using the world-class research facilities of the Centre for Research in Biosciences, the bioscience research is excellent and of international standard. Current research projects include:-

- Genomics research into molecular diagnostic methods for non-invasive prenatal diagnosis
- Neuroscience: the function of the blood-brain barrier
- In vitro toxicology
- Cancer and ageing
- Red cell membrane molecular biology and red cell antigen expression
- Magnetic detection systems for biological interactions.

### Employer feedback/interaction

The faculty has excellent links with the forensic science practitioners in the area. The Avon and Somerset Constabulary are very supportive of the forensic science teaching at UWE, and has collaborated with a number of undergraduate research projects. Local Home Office Forensic Pathologists have also been involved with the faculty for many years - one is involved in teaching the level 3 compulsory forensic science module.

A local independent laboratory has strong links with the Forensic Science team at UWE.

This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of individual modules can be found in module specifications, available on the [University's website](#).