

CORPORATE AND ACADEMIC SERVICES

PROGRAMME SPECIFICATION

Part 1: Basic Data	
Awarding Institution	UWE
Teaching Institution	UWE (optional 2nd year delivered by Virginia Commonwealth University)
Delivery Location	UWE, Frenchay Campus (optional 3 rd year, Richmond, Virginia, USA)
Faculty responsible for programme	Faculty of Health and Applied Sciences
Department responsible for programme	Department of Biological, Biomedical and Analytical Sciences.
Modular Scheme Title	
Professional Statutory or Regulatory Body Links	The Chartered Society of Forensic Sciences.
Highest Award Title	BSc (Hons) Forensic Science
Default Award Title	
Fall-back Award Title	
Interim Award Titles	Cert. HE in Forensic Science Dip. HE in Forensic Science BSc Forensic Science
UWE Progression Route	MSc Advanced Forensic Analysis.
Mode(s) of Delivery	FT/PT
Codes	UCAS: F410 JACS: F400 ISIS2: F410 HESA:
Relevant QAA Subject Benchmark Statements	Chemistry, Biosciences, Forensic Science.
CAP Approval Date	2 February 2016
Valid from	September 2016
Valid until Date	September 2019
Version	1.2

Part 2: Educational Aims of the Programme

The BSc (Hons) Forensic Science programme provides an opportunity for students to explore the theory and practice of forensic science. In addition to offering the basis of vocational careers in forensic science, this programme provides a wider base of scientific skills, together with important generic graduate skills, particularly in an analytical approach to problems. Students may select optional modules in years 2 and 3 to specialise in either Chemistry or Biology. The forensic team aims to create a friendly and supportive atmosphere that will support individual

Part 2: Educational Aims of the Programme

students to use the learning experience at UWE to create a graduate foundation, on which they can develop their future careers and on-going social and educational development.

To this end a programme has been designed which will enable students to:

- study the breadth of forensic science from scenes of crime issues to courtroom presentations, and relevant topics in the related fields of molecular biology, analytical chemistry and law.
- be confident in the theory and practical application of a wide range of technologies for experimental and data analysis relevant to forensic science and more broadly the fields of chemistry and biology.
- be ready and able to contribute positively to society as graduate level employees. Embedded skills reviews, credited employment, and assessments in which students take on the role of forensic professionals are key enablers in the achievement of this aim.
- be lifelong, reflective learners who understand the roles and responsibilities of scientists in society.
- engage in constructive, critical analysis.

In addition to the above, the International variant of this programme provides the opportunity for study abroad with general and specific benefits. The experience of a different educational as well as social culture and the contacts made with professionals in another country are of great potential value to students. The UK and the USA are two of the countries using the most advanced technology in Forensic Science, and the complementary specialist expertise of academics at VCU to those at UWE provide additional educational benefit to students on this programme.

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

Successful graduates will have a strong foundation of Biology, Chemistry, Statistics, Crime Scene Skills and legal aspects of forensic evidence and will benefit from using specialist forensic and chemical instrumentation. Graduates will have carried out investigations of mock indoor, outdoor and vehicle crime scenes and taken a mock case from 'crime scene to court'. This requires excellent analytical, communication and time management skills. Graduates will have undertaken an independent research project in an area related to forensic science. They will have experience in the qualitative and quantitative interpretation of scientific results and numerical data, a vital part of forensic science.

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:

Learning Outcomes:	USSJRT-30-1	USSJRV-30-1	USSJRU-30-1	USSJRW-30-1	USSKAU-30-2	USSKB9-15-2	USSKB7-15-2	USSKB8-15-2	USSKB5-15-2	USSKAV-30-2	LUUJJD-30-2
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Part 3: Learning Outcomes of the Programme

Part 3: Learning Outcomes of the Programme										
A) Knowledge and understanding of:										
The fundamental biology, chemistry, physics and mathematics which underpin successful forensic scientific endeavor.										
The scope and nature of scientific evidence, its value to society and the roles and responsibilities of forensic scientists.		X			X			X		X
The techniques used in crime scene investigation.		X			X			X		
The theory and application of the principal laboratory methods used routinely in forensic science.		X		X	X	X		X		X
Principles and procedures relating to the interpretation, evaluation and presentation of evidence.		X			X	X		X		X
Wider aspects of science associated with forensic science and studies, especially Biology and Chemistry.	X	X	X	X	X	X	X	X	X	X
Methodology of scientific inquiry and research.		X		X	X	X				
The range of techniques used for the extraction and analysis of DNA.		X					X	X		
The principles and procedures used in chemical analysis and the characterisation of chemical compounds.	X	X		X	X	X			X	X
The facts, principles, practices and applications of organic, inorganic and physical chemistry.	X	X		X	X	X			X	X
The explanation of biological phenomena at a variety of levels from biological molecules to whole organisms.			X				X	X		
Gene expression, with detailed knowledge of specific examples.			X				X	X		
Human physiology, pathology, disease and pharmacology.			X					X	X	X
(B) Intellectual Skills										
Select appropriate strategies, techniques and procedures for the examination of a scene of crime.		X			X			X		
Select appropriate strategies, techniques and procedures for the examination of forensic evidence.		X			X	X		X		X
Interpret and evaluate evidence and report on it appropriately.		X			X			X		X
Recognise and apply subject-specific theories, paradigms, concepts or principles.	X	X	X	X	X	X	X	X	X	X

Part 3: Learning Outcomes of the Programme

Critically analyse, synthesise and summarise information, including published research or reports, and use several lines of information to form and test hypotheses.					X			X			
Recognise the moral and ethical issues of investigations and appreciating the need for ethical standards and professional codes of conduct.							X				X
Recognise and implement good measurement science and practice.		X		X	X	X		X			
(C) Subject/Professional/Practical Skills											
Plan and safely execute scientific investigations, including a programme of independent research.											
Obtain, record, collate and critically analyse data using appropriate techniques in the field and/or laboratory.	X	X	X		X	X		X	X		
Handle, analyse and report forensic samples with awareness of validity and contamination issues.		X			X			X			
Communicate results and their interpretation clearly and unambiguously.	X	X	X	X	X	X	X	X			X
Synthesise a variety of appropriate skills to meet the requirements of forensic analysis.		X			X	X					
Adhere to safe working practices.	X	X	X	X	X	X	X		X	X	
Comply with ethical, legal and quality assurance principles such as the chain of custody.		X			X		X				X
Conduct standard laboratory procedures for synthetic and analytical work and competently operate standard equipment.	X	X		X	X	X	X		X		
(D) Transferable skills and other attributes											
Evaluate their own academic performance and plan work accordingly.											X
Study independently in a variety of learning styles.	X	X	X	X	X	X	X	X	X	X	
Work effectively as a team member.		X			X		X				
Practise good time management, prioritise workloads and recognise deadlines.							X				X

Part 3: Learning Outcomes of the Programme

Communicate effectively in a variety of media and contexts; in particular, express the interpretation of results in a manner comprehensible to the intended recipient and write comprehensive, comprehensible, rational and impartial reports.				X			X	X				
Use mathematical and statistical methods effectively in problem solving.					X	X						X
Use a variety of IT skills for data processing, communicating and supporting scientific research.	X	X	X	X	X	X	X	X	X	X		

Continued:

Learning Outcomes:	USSJUP-30-3 For. Bio. Gen.	USSJUR-30-3 For. Ana. Tox.	USSJUQ-30-3 Forensic Project	USSKBF-30-3	USSKBQ-30-3	USSKBW-15-3	USSKCA-15-3	USSKBX-15-3	USSKCE-15-3	USSKCD-15-3	USSKCH-15-3
A) Knowledge and understanding of:											
The scope and nature of scientific evidence, its value to society and the roles and responsibilities of forensic scientists.	X	X	X		X				X	X	
The techniques used in crime scene investigation.			X							X	
The theory and application of the principal laboratory methods used routinely in forensic science.	X	X	X		X						
Principles and procedures relating to the interpretation, evaluation and presentation of evidence.	X	X	X		X					X	
Wider aspects of science associated with forensic science and studies.	X	X	X	X	X	X	X	X	X	X	X
Methodology of scientific inquiry and research.	X	X	X	X				X	X		
The range of techniques used for the extraction and analysis of DNA.	X		X								
The principles and procedures used in chemical analysis and the characterisation of chemical compounds.	X	X	X		X			X		X	
The facts, principles, practices and applications of organic, inorganic and physical chemistry.		X	X		X			X		X	
The explanation of biological phenomena at a variety of levels from biological molecules to whole organisms.	X			X			X	X			
Gene expression, with detailed knowledge of specific examples.				X							
Human physiology, pathology, disease and pharmacology.		X	X			X	X	X			X
(B) Intellectual Skills											
Select appropriate strategies, techniques and procedures for the examination of a scene of crime.			X							X	
Select appropriate strategies, techniques and procedures for the examination of forensic evidence.	X	X	X		X					X	
Interpret and evaluate evidence and report on it	X	X	X								

Part 3: Learning Outcomes of the Programme											
appropriately.											
Recognise and apply subject-specific theories, paradigms, concepts or principles.	X	X	X	X	X	X	X	X	X	X	X
Critically analyse, synthesise and summarise information, including published research or reports, and use several lines of information to form and test hypotheses.	X	X	X						X		
Recognise the moral and ethical issues of investigations and appreciating the need for ethical standards and professional codes of conduct.	X	X	X						X		
Recognise and implement good measurement science and practice.	X	X	X		X					X	
(C) Subject/Professional/Practical Skills											
Plan and safely execute scientific investigations, including a programme of independent research.			X								
Obtain, record, collate and critically analyse data using appropriate techniques in the field and/or laboratory.	X	X	X	X	X			X		X	
Handle, analyse and report forensic samples with awareness of validity and contamination issues.	X	X	X								
Communicate results and their interpretation clearly and unambiguously.	X	X	X	X	X		X	X	X	X	
Synthesise a variety of appropriate skills to meet the requirements of forensic analysis.	X	X	X							X	
Adhere to safe working practices.	X	X	X	X	X	X		X	X	X	
Comply with ethical, legal and quality assurance principles such as the chain of custody.	X	X	X								
Conduct standard laboratory procedures for synthetic and analytical work and competently operate standard equipment.	X	X	X	X	X			X		X	
(D) Transferable skills and other attributes											
Evaluate their own academic performance and plan work accordingly.			X								
Study independently in a variety of learning styles.	X	X	X	X	X	X	X	X	X	X	
Work effectively as a team member.			X								
Practise good time management, prioritise workloads and recognise deadlines.	X	X	X								
Communicate effectively in a variety of media and contexts; in particular, express the interpretation of results in a manner comprehensible to the intended recipient and write comprehensive, comprehensible, rational and impartial reports.	X	X	X		X				X	X	
Use mathematical and statistical methods effectively in problem solving.	X	X	X							X	
Use a variety of IT skills for data processing, communicating and supporting scientific research.	X	X	X	X	X	X	X	X	X	X	X

Part 3: Learning Outcomes of the Programme

Part 4: Student Learning and Student Support

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

The programme team aims to provide an outstanding learning experience for all students. Learners are supported from induction to graduation and beyond. Right from induction students meet key staff who will support them on their learning journey including personal tutors, the programme leader and staff from library, careers, student support and IT services. Physical and electronic resources provide important details on the programme content and assessment and give detail of the support systems available to help students achieve their potential.

For students with individual support needs consultation with the individual and Disability Services happens from application onwards. All students are advised in induction on obtaining reasonable adjustments for disabilities, maternity or paternity periods from Disability Services.

Consultation with alumni has indicated that students feel supported in times of adversity. The following quote was received from a recent successful graduate.

“My experience at UWE studying on the Forensic Science course exceeded my expectations. The forensic staff have an in-depth knowledge and are always willing to give help and support. Due to an unfortunate accident a short way into my final year, which meant I had to take time out extending my course from three to four years, I was overwhelmed by the support I got from the forensic staff. Without this outstanding support, I believe I wouldn't have been able to achieve my goals.”

Various initiatives are in place to support widening participation in the forensic science programmes. These include, but are not limited to:

- Streamed support in chemistry enabling students from all academic backgrounds to underpin higher level study whilst maintaining challenge and interest for the most academically able.
- Recruitment to level 3 from the FdSc Forensic Science programme.
- A flexible approach to study enabling students for whom full time study is not an option to design an individual programme of study in partnership with the programme leader.

As indicated above, all students are allocated a personal tutor in their first week of study to act as an initial point of contact/ 'friendly face'. The focus of the personal tutor at level 1 is to help tutees to settle in to the university, at level 2 to focus on employability and study skills and at level 3 to guide through the research project and assist in securing employment or further study. All students are encouraged to make regular 1-2-1 appointments with their tutor to discuss progression and any issues arising.

Students are also encouraged to make use of the Peer Assisted Learning (PAL) system for help with academic issues.

All students on the course have the opportunity to take up student membership of the Chartered Society of Forensic Sciences and also have the opportunity to join our excellent student

Part 4: Student Learning and Student Support

Forensic Science Society. The latter has hosted national conferences, workshops and guest lectures as well as regular social events.

At UWE, Bristol there is a policy for a minimum average requirement of 12-hours/week contact time over the course of the full undergraduate programme. This contact time encompasses a range of face-to-face and online activities as described below. In addition a range of other learning activities will be embedded within the programme, which, together with the contact time, will enable learning outcomes to be achieved and demonstrated.

On the Forensic Science programmes teaching is a mix of scheduled and independent learning. Skills for independent and lifelong learning are incorporated into the Skills for Science, Scientific Skills, Forensic Analysis and Project modules.

Scheduled learning includes lectures, practical classes, subject specific tutorials, academic support tutorials, project supervision and workshops. Scheduled sessions may vary slightly depending on the module choices made. Students will also receive interactive online material and lectures.

Independent learning includes hours engaged with essential reading, case study preparation, assignment preparation and completion etc.

Placement learning: may include a practice placement, other placement, year abroad.

Description of any Distinctive Features

- The Forensic Science programme is accredited by the Chartered Society of Forensic Sciences in three component standards- Crime Scene Investigation, Laboratory Analysis, and Interpretation, Evaluation and Presentation of Evidence.
- The Forensic Science programme is characterised by a significant practical component. All students have the opportunity to benefit from using a wide range of specialist instrumental technology to enhance their learning and practical skills development. Our well-equipped laboratories were commended by the (then) Forensic Science Society in 2011 and again in 2013 and were also commented upon positively by our External Examiner Brian Rankin, during his January 2014 visit.
- Students are assessed in a variety of assessment formats, in keeping with the diversity of module learning outcomes. Our external examiners have commented that 'coursework assessments provide interest and challenge across a broad range of learning outcomes' and that 'the use of context based teaching, learning and assessment tasks is motivational as well as relevant to the development of professional knowledge and skills'.
- In addition to our crime scene facility, training in crime scene investigation; laboratory analysis and court presentation is aided by the use of Second Life as a VLE. A number of crime scenes have 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.
- There is opportunity to apply to study level 2 at Virginia Commonwealth University (VCU).
- Following an HE STEM project, an exercise is run which brings students into direct contact with employers in the fields of DNA analysis and analytical chemistry.

Part 5: Assessment

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

Assessment Strategy

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

Assessments throughout the programme enable students to acquire the necessary knowledge, understanding and skills outlined in the learning outcomes of the programme.

An “assessment for learning” strategy has been adopted, where assessment is used as a tool to enable students to reach learning outcomes, which they have not yet met. This often takes the form of formative and summative assessments which explicitly feed forward into future assignments or between levels. Tasks are built upon between levels and the assessment journey is made clear to students through guidance documentation. One example is the development of practical forensic science skills in the programme: Students are assessed on processing of basic crime scenes and crime scene skills at level 1 in Scientific Investigation of Crime; investigate more unusual scenes and undertake guided laboratory examinations at level 2 in Forensic Analysis and independently process scenes, analyse evidence and produce reports for court at level 3 in Interpretation of Forensic Evidence. At level 3 students undertake a variety of real world forensic professional roles, their performance in each forming the basis of coursework assessment.

Considerable emphasis is given to the assessment of learning undertaken in the practical laboratory and crime scene facilities, as well as critical evaluation, and communication in a range of formats including reports for court and courtroom assessment of the oral presentation of evidence, including cross-examination.

The syllabus and assessment of Scientific Skills module (level 1); and Forensic Analysis (level 2) include activities such as skills evaluation, reflections on academic and extra-curricular achievements, action planning and work integrated learning.

In 2013 External Examiner Lee Banting commented that “UWE and UCY have an extremely sound and broad assessment strategy. A range of assessment examines a wide range of subject specific and academic skills necessary for a fully functional graduate”.

Typically at level 1 the coursework contributes 60% of the module mark and written exams, including multiple-choice questions, contribute 40%. At level 2 the written exams typically contribute 50% with coursework 50% and at level 3 most modules have 60% of the module mark derived from written exams and 40% from a range of demanding coursework. Core forensic modules, with a strong emphasis on practice orientated coursework assessment have a 50:50 split at level 3, in recognition of the importance and complexity of these activities.

Assessment Map

The programme encompasses a range of **assessment methods** including; crime scene examination, reports on laboratory practical exercises, data analysis and interpretation, oral and poster presentations, essays and written exams. These are detailed in the following

Part 5: Assessment

assessment map:

Assessment Map for BSc (Hons) Forensic Science

		Type of Assessment*											
		Unseen Written Exam	Open Book Written Exam	Controlled Essay	Practical Exam – crime scene	Practical Skills Assessment	Oral assessment and/or presentation – including courtroom	Reflection on visit to court	Report based on practical work – including report for court	Data analysis/Interpretation/ problem solving exercise/case study	Critical review/ poster presentation	Essay/Dissertation	Portfolio
Compulsory Modules Level 1	USSJRT-30-1	A (40)											B (60)
	USSJRU-30-1	A (40)								B (24)			B (36)
	USSJRV-30-1	A (40)			B (20)		B (20)						B (20)
	USSJRW-30-1	A (20)	A (20)							B (36)			B (24)
Compulsory Modules Level 2	UJUJJD-30-2	A (40)					B (10)				B (50)		
	USSKAU-30-2	A (50)				B (20)				B (30)			
	USSKAV-30-2	A (50)								B (17)			B (33)
Optional Modules Level 2	USSKB7-15-2	A (50)									B (50)		
	USSKB9-15-2	A (50)						B (50)					
	USSKB8-15-2	A (50)										B (40)	B (10)
	USSKB5-15-2	A (50)											B (50)
Compulsory Module Level 3	USSJUQ-30-3 Forensic Project	A (50)			B (12.5)		B (12.5)		B (12.5)				B (12.5)
Optional Modules Level 3	USSJUP-30-3 For.Bio.Gen.	A (50)										B (35)	B (15)
	USSJUR-30-3 For.Ana.Tox.	A (50)							B (25)		B (25)		
	USSKBQ-30-3	A (60)							B (40)				
	USSKBF-30-3	A (60)								B (20)	B (20)		
	USSKBH-30-3	A (60)					B (20)					B (20)	
	USSKCD-15-3 Enviro. For.	A (60)								B (40)			
	USSKBX-15-3	A (60)											B (40)

Part 5: Assessment

	USSKCA-15-3	A (60)								B (40)			
	USSKBW-15-3	A (60)										B (40)	
	USSKCE-15-3			A (50)									A (50)
	USSKCH-15-3	A (60)								B (40)			

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

	Compulsory Modules		Interim Awards
Year 1	USSJRT-30-1 Chemistry in Context	None	Certificate of Higher Education (CertHE Forensic Science) 120 credits at level 1 or above.
	USSJRU-30-1 Human Biological Systems		
	USSJRV-30-1 Scientific Investigation of Crime		
	USSJRW-30-1 Scientific Skills		

	Compulsory Modules		Interim Awards
Year 2	UJUUJD-30-2 Law and Expert Evidence	USSKB9-15-2 Instrumental Analytical Science (Semester 1)	Diploma of Higher Education (DipHE Forensic Science) 240 credits (at least 100 credits at level 2) <i>Other requirements:</i> Students may only study one 15 credit module in each semester. Students must study either USSKB9-15-2 AND/OR USSKB7-15-2
	USSKAU-30-2 Forensic Analysis	USSKB8-15-2 Forensic Biology (Semester 1)	
	USSKAV-30-2 Drugs and Toxicology	USSKB7-15-2 Molecular Genetics (Semester 2)	
		USSKB5-15-2 Medicinal Chemistry (Semester 2)	

Year Out: Students may elect to spend a year out working for an organisation, in an appropriate placement to gain relevant work experience. Professional Services will

support students in this endeavor. Credit is achieved through the USSK57-15-3 Professional Practices in Applied Sciences module.

		Compulsory Modules	Optional Modules	Interim Awards
Year 3		USSJUQ-30-3 Forensic Project	USSKBQ-30-3 Advanced Analytical Science	Degree (BSc Forensic Science) – 300 credits, at least 60 credits at level 3. <u>Other requirements:</u> Students must study at least ONE of: Advanced Analytical Science AND Forensic Analysis and Toxicology OR Forensic Biology and Genetics AND Genomics Technologies.
			Module number: USSKBF-30-3 Module name: Genomics Technologies	
			USSJUR-30-3 Forensic Analysis and Toxicology	
			USSJUP-30-3 Forensic Biology and Genetics	
			USSKCD-15-3 Environmental Forensics	Students may only study one 15 credit module in each semester. Students may study one from: USSKBW-15-3 Pathophysiology; USSKBX-15-3 Pharmacology and Toxicology; USSKCH- 15-3 Forensic Psychology AND one from: USSKCA-15-3 Neuropharmacology; USSKCE-15-3 Science Communication; USSKCD-15-3 Environmental Forensics.
			USSKBX-15-3 Pharmacology and Toxicology	
			USSKCA-15-3 Neuropharmacology	
			USSKBW-15-3 Pathophysiology.	
			USSKCE-15-3 Science Communication	
			USSKCH-15-3 Forensic Psychology	
		USSK57-15-3 Professional Practices in Applied Sciences		
		USSK57-15-3 Professional Practices in Applied Sciences		

Part time:

Part-time students can select an appropriate selection of modules, depending on timetable arrangements, for each year of study subject to pre-requisites and advice from the programme leader.

The following year two structure diagram applies if students elect to study at Virginia Commonwealth University in the second year of the degree programme.

VCU	at VCU Year 3	Compulsory Modules	Optional Modules	Interim Awards
		Genetics BIOL 310 (3 credits) Genetics Lab BIOZ 310 (2 credits) Forensic Microscopy FRSC 365 (4 credits) Forensic Serology FRSC 385 (3 credits) Quantitative Analysis CHEM 309 (3 credits) Forensic Evidence FRSC 375 (3 credits) Statistical Methods STAT 210 (3 credits)	Forensic Anthropology FRSC 310 (3 credits) Forensic Fire Investigation FRSC 320 (3 credits) Professional Practices in Forensic Science FRSC 490 (3 credits) Forensic Evidence, Law and Criminal Procedure FRSC 375 (3 credits)	Diploma of Higher Education 240 credits (at least 100 credits at level 2) 120 credits at level 2 are awarded by UWE for successful completion of 24 VCU credits. Other requirements: Students must study ONE optional module Variation to the above courses studied at VCU may be undertaken with agreement of the Programme Leader and colleagues at VCU

Part 7: Entry Requirements

300 UCAS Tariff Points for the year of entry (refer to the UWE website).

A levels: A level in Biology or Chemistry; minimum of two A levels.

BTEC: Minimum of DDM from BTEC Diploma.

All non-standard applicants are considered on a case by case basis by the programme leader.

Transfer on to this course via Accredited Learning is only possible after a full mapping exercise against the Chartered Society of Forensic Sciences component standards has taken place, demonstrating equivalence of study against accredited modules.

Part 8: Reference Points and Benchmarks

- Requirements of Professional Bodies**

The Chartered Society of Forensic Sciences is the professional body which operates an accreditation scheme for university courses in forensic science, and this course has been accredited (UWE being one of the first four universities to have been recognised in this way) in all three main component standards – (1) Crime Scene Investigation, (2) Laboratory Analysis and (3) Interpretation, Evaluation, and Presentation of Evidence. Students may join The Chartered Society of Forensic Sciences as student members. Graduates who have undertaken chemistry focussed modules at levels 2 and 3 may apply to become Associate Members of the Royal Society of Chemistry. Graduates who have undertaken a Biology focused modules at levels 2 and 3 may apply to become Associate Members of the Society of Biology.

The programme team had a successful surveillance visit from the Chartered Society of Forensic

Part 8: Reference Points and Benchmarks

Sciences in December 2015, and we obtained two extra commendations; for our work in crime scene investigations in virtual worlds and for achieving certified status as an assessment centre for the Chartered Society's Pre-Employment Assessment of Competence. We have also updated our teaching to cover minor omissions identified on review of the QAA Forensic Science benchmark statement and have improved our research profile and technology enhanced learning through new collaborations (Knowledge Transfer Partnership Research Project linked to industry) and projects (development of 'virtual' crime scenes for teaching and learning). We have also updated to reflect current professional practice e.g. incorporation of Streamlined Forensic Reporting in our teaching and assessment. These factors give the team confidence in the quality and appropriateness of the current versions of the programmes.

A Strategic Employers Group incorporating members of the Police Service and local and national forensic providers informs course developments. UWE Forensic Sciences also participate in a STEM (a national Science, Technology, Engineering and Mathematics group) employment project, an initiative that brings students into direct dialogue with employers in the areas of DNA and chemical analysis. Students are further assisted in obtaining employment by the UWE Careers Service and the specialist academic support they receive during the employability focused level 2 tutor group system.

- **Qualification descriptors used in the QAA Framework for Higher Education Qualifications**

The learning outcomes for the programme have been developed with reference to the qualification descriptors used in the QAA Framework for Higher Education Qualifications. In particular, the learning outcomes for modules at level one and level two have been considered to be consistent with the award of a Certificate in Higher Education and a Diploma in Higher Education respectively. Graduates of the award achieving an Honours classification will develop an understanding of a complex body of knowledge related to forensic science. In addition, the graduate will develop skills in analytical techniques, problem-solving skills and communication skills that can be applied to a range of employment opportunities.

- **Subject benchmark statements**

Owing to its interdisciplinary nature, this programme draws on several subject benchmark statements for guidance.

Forensic Science Benchmarking

The specific requirements for forensic science have been informed by the knowledge and experience of staff who 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 Chartered Society of Forensic Sciences in addition to the QAA benchmark for Forensic Science, which the programme team were consulted on the development of and which aligns closely with this programme specification. Elements of the chemistry and bioscience benchmarks are relevant for the analytical aspects of forensic science.

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.

Part 8: Reference Points and Benchmarks

- 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 as a full chemistry course.

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

- Major aspects of chemical terminology, nomenclature, conventions and units.
- 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.

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.

- **University's Mission Statement**

The programme has been refreshed to align fully with the UWE Bristol Strategy 2020. Examples are given in this document of good practice in learning and teaching, techniques to prepare graduates for employment or further study, of how research informs teaching and how students and staff benefit from our partnerships.

- **University's learning and teaching policies**

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In line with the University's 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 participation and engagement in the learning process. The programme seeks to create an environment that will stimulate students to take responsibility for aspects of their learning, while lecturers take responsibility for facilitating that learning. Module learning outcomes have been designed to ensure that students meet the overall programme learning outcomes on completion of the programme. In addition, the FACS (Forensic, Chemical and Analytical Science) section of the Faculty has been active in developing and strengthening the key skills aspects of the programmes.

A variety of assessment methods is incorporated within the programme to cater for a diversity of student strengths and abilities. Although this document focuses on summative assessment, the course team recognise the importance of both summative and formative assessment activity as an integral part of the learning and teaching process. All assessments will comply with the University Assessment Policy and Academic Regulations.

- **Research carried out by staff**

Teaching is delivered by a team of very knowledgeable and enthusiastic staff with a wide-range of expertise and practitioner experience, including world-leading researchers in biosciences and analytical chemistry who lead both modules and research projects on the forensic science programmes. Research is undertaken in the following areas of particular impact on forensic science:

- Optimisation of VMD as a technique for the development of fingermarks 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 in forensic science topics is also supported by a wide range of other research interests across the fields of biology and chemistry.

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.

What methods have been used in the development of this programme to evaluate and improve the quality and standards of learning? This could include consideration of stakeholder feedback from, for example current students, graduates and employers.

The department has excellent links with the forensic science practitioners in the area. The Avon

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and Somerset Constabulary are very supportive of the forensic science teaching at UWE, and collaborate for 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 research links with the Forensic Science team at UWE.

There is a Strategic Employers Group for the Forensic Analytical and Chemical Sciences subject group and local employers discuss with the programme team how to ensure that the curriculum is current and appropriate. Current students and graduates also provide feedback and suggestions for improving the quality and standards of learning.

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](#).