



## MODULE SPECIFICATION

Part 1: Information			
Module Title	Forensic Analysis and Toxicology		
Module Code	USSJUR-30-3	Level	Level 6
For implementation from	2020-21		
UWE Credit Rating	30	ECTS Credit Rating	15
Faculty	Faculty of Health & Applied Sciences	Field	Applied Sciences
Department	HAS Dept of Applied Sciences		
Module type:	Standard		
Pre-requisites	Instrumental Analytical Science 2019-20		
Excluded Combinations	Forensic Biology and Genetics 2020-21, Genomic Technologies 2020-21		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
<p><b>Overview:</b> Pre-requisites: students must have passed USSKB9-15-2 Instrumental Analytical Science. Co-requisites: students must take USSKBQ-30-3 Advanced Analytical Science.</p> <p><b>Features:</b> Excluded Combinations: USSJUP-30-3 Forensic Biology and Genetics; USSKBF-30-3 Genomic Technologies</p> <p><b>Educational Aims:</b> See Learning Outcomes.</p> <p><b>Outline Syllabus:</b> Forensic Toxicology: Pharmacokinetics and metabolism of drugs of abuse and other toxic substances, including synergistic and idiosyncratic effects. Ante-mortem and post-mortem testing for a range of metabolites. Selection of analyte and specimen type; evidence integrity and preservation. Quality control and regulatory aspects. Interpretation of toxicological results - research data, individual variation, multiple factors.</p> <p>Forensic Analysis: Issues relating to the use of GC, HPLC, FTIR, uv-vis spectrophotometry, X-ray analysis and mass spectrometry (including combined techniques) for a wide range of forensic evidence types. Electrochemical sensors/biosensors as applied to forensic analysis. Selection of method for a range of analyses considering analytes, matrices, sample size and concentration in a forensic context. Examples may include drugs, poisons, fire accelerants, explosives, firearms</p>

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discharge residues, paint, glass, plastics, soil, inks, fibres, dyes. Key requirements for forensic casework. Commonly encountered synthetic routes to poisons and drugs. Potential hazards of investigating illicit laboratories - principles and strategies. Elements of risk assessment.

Sampling issues and sample preparation: Extraction and/or matrix matching. Presumptive testing of drugs. Optimisation of analytical methods, especially for chromatography, mass spectrometry and atomic spectroscopy. Derivatisation to improve compound stability and method sensitivity.

Interpretation of results: Evaluation of methods and results including application of appropriate statistical testing, specification testing, data presentation, valid comparisons and conclusions in context with reference to research literature and databases. Communication to a lay audience (jury in court).

Drugs legislation: national and international processes for monitoring drug supply and abuse. Legislation relating to driving under the influence of alcohol and drugs.

Generic Graduate Skills:-

Practiced and Evidenced:

Communication  
Professionalism  
Critical Thinking  
Digital Fluency

Evidenced:

Innovative and Enterprising

**Teaching and Learning Methods:** The content of the module is delivered through a mixture of lectures, tutorial classes and practical classes.

### Part 3: Assessment

The problem-solving approach in virtual and practical laboratory exercises enables students to reflect on and refine their knowledge, understanding and skills throughout the programme of study. Informal formative feedback is given throughout these learning situations, enabling students to evidence their achievements in the summative assessments.

Students produce six individual contemporaneous laboratory examination records for both virtual and practical exercises, in keeping with professional practice in forensic science. The laboratory examination record is a detailed documentation of all laboratory work and includes anti contamination procedures, analytical procedure and results and their critical evaluation. Students must submit a record for each laboratory exercise.

Component A is composed of two unseen online examinations. These assessments allow students to demonstrate their ability to research, prioritise information and produce a structured, evidence based answer. A written exam is the appropriate summative assessment of knowledge and understanding and cognitive skills relating to major aspects of the syllabus.

All work is marked in line with the Faculty of Health and Applied Sciences Generic Assessment Criteria for level 3.

First Sit Components	Final Assessment	Element weighting	Description
Examination (Online) - Component A		25 %	Online examination 1 (24 hours)
Examination (Online) - Component A	✓	25 %	Online examination 2 (24 hours)
Professional Practice Report - Component B		50 %	Laboratory Examination Records including critical evaluation.

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Resit Components	Final Assessment	Element weighting	Description
Professional Practice Report - Component B		50 %	Laboratory Examination Records including critical evaluation produced from provided data
Examination (Online) - Component A	✓	50 %	Online examination (24 hours)

Part 4: Teaching and Learning Methods																	
Learning Outcomes	<p>On successful completion of this module students will achieve the following learning outcomes:</p> <table border="1"> <thead> <tr> <th>Module Learning Outcomes</th> <th>Reference</th> </tr> </thead> <tbody> <tr> <td>Devise strategies for the selection, preservation and analysis of specimens in forensic toxicology, demonstrating knowledge of pharmacokinetics and metabolism</td> <td>MO1</td> </tr> <tr> <td>Undertake the preparation and analysis of drugs and toxicological samples, using a broad range of industry standard analytical instrumentation</td> <td>MO2</td> </tr> <tr> <td>Critically evaluate methods for and data produced from the analysis of forensic and toxicological evidence</td> <td>MO3</td> </tr> <tr> <td>Produce and present laboratory examination records to a professional standard</td> <td>MO4</td> </tr> </tbody> </table>	Module Learning Outcomes	Reference	Devise strategies for the selection, preservation and analysis of specimens in forensic toxicology, demonstrating knowledge of pharmacokinetics and metabolism	MO1	Undertake the preparation and analysis of drugs and toxicological samples, using a broad range of industry standard analytical instrumentation	MO2	Critically evaluate methods for and data produced from the analysis of forensic and toxicological evidence	MO3	Produce and present laboratory examination records to a professional standard	MO4						
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Reading List	<p>The reading list for this module can be accessed via the following link:</p> <p><a href="https://uwe.rl.talis.com/modules/ussjur-30-3.html">https://uwe.rl.talis.com/modules/ussjur-30-3.html</a></p>																

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### Part 5: Contributes Towards

This module contributes towards the following programmes of study:

Forensic Science [Sep][FT][Frenchay][3yrs] BSc (Hons) 2018-19

Forensic Science [Sep][FT][Frenchay][4yrs] MSci 2018-19