



MODULE SPECIFICATION

Part 1: Information			
Module Title	Forensic Biology		
Module Code	USSKB8-15-2	Level	2
For implementation from	September 2019		
UWE Credit Rating	15	ECTS Credit Rating	7.5
Faculty	Health and Applied Sciences	Field	Applied Sciences
Department	Department of Applied Sciences		
Contributes towards	MSci Forensic Science MSci Forensic Science (with Foundation Year) BSc Forensic Science BSc Forensic Science (with Foundation Year)		
Module type:	Standard		
Pre-requisites	USSJRU-30-1 Human Biological Systems		
Excluded Combinations	USSKB5-15-2 Medicinal Chemistry USSKB9-15-2 Instrumental Analytical Science		
Co- requisites	N/A		
Module Entry requirements	N/A		

Part 2: Description
<p>This module examines how forensic scientists identify biological materials and analyse such materials to obtain genetic information relating to the donor for both human and non-human species.</p> <p>Identification of biological material</p> <ul style="list-style-type: none"> • Immunological assays; an introduction to antibodies and antigens, including antigen-antibody binding reactions; primary and secondary reactions, precipitation and agglutination. Production of monoclonal and polyclonal antibodies. • Forensic application of primary binding assays. Enzyme-linked immunosorbent assay for the detection of seminal stains and saliva; immunochromatographic assays for the identification of blood, saliva and semen. • Forensic application of secondary binding assays. Precipitation-based assays such as immunodiffusion, Ouchterlony and electrophoretic methods used for species identification and to distinguish vaginal and seminal secretions. • Forensic application of RNA based assays. Detection of specific types of mRNA expressed exclusively in certain cells to identify body fluids. Real-time PCR to detect gene expression levels of mRNAs.

Genetic information relating to both human and non-human species

- Genetic linkage. Genetic assignment to a relative, a population or geographic region for human and nonhuman species. Use of STRs and their characterisation.
- Real-time PCR. Basic principles for the use of real-time PCR including real-time fluorescence-based quantitative polymerase chain reaction, PCR microchip applications in forensic analysis, and PCR methods based on mitochondrial gene.
- Population genetics. An introduction to allele and genotype frequency, including an investigation of Hardy-Weinberg principles and testing HW proportions for population databases.

Teaching and Learning Methods

Practical laboratory sessions will provide experience of techniques used in forensic serology. Practical and tutorial sessions will provide opportunities for data handling and interpretation, problem solving and discussions with academic staff.

Part 3: Assessment: Strategy and Details

The Assessment Strategy has been designed to support and enhance the development of both subject-based and employability skills, whilst ensuring that the modules Learning Outcomes are attained, as described below.

The controlled component is a written exam. The exam will be 2 hours duration. This will provide a valuable learning experience through recalling and demonstrating knowledge which will be of benefit when progressing to final year modules.

The coursework comprises an essay which entails a critique of techniques used to confirm the presence of body fluids in forensic biology. Understanding the appropriate test and sequence of analysis is a vital skill for forensic biology students; consequently this assessment can be described as an assessment to enhance employability and learning.

Opportunities for formative assessment, discussion of current research and the evaluation of research methods are built into the lectorials and practical classes. All work is marked in line with the Faculty Generic Assessment Criteria and conforms to university policies for the setting, collection, marking and return of student work.

Identify final timetabled piece of assessment (component and element)		A1	
% weighting between components A and B (Standard modules only)		A: 50%	B: 50%
First Sit			
Component A (controlled conditions) Description of each element		Element weighting (as % of component)	
1. Examination (2 hours)		100%	
Component B Description of each element		Element weighting (as % of component)	
2. Essay (1500 words)		100%	
Resit (further attendance at taught classes is not required)			
Component A (controlled conditions) Description of each element		Element weighting (as % of component)	
1. Examination (2 hours)		100%	
Component B Description of each element		Element weighting (as % of component)	
1. Essay (1500 words)		100%	

Part 4: Learning Outcomes & KIS Data

Learning Outcomes	<p>On successful completion of this module students will be able to:</p> <ul style="list-style-type: none"> Describe and critically assess the use of immunological assays to indicate the presence of body fluids and relate these to sensitivity and specificity (Component A); Research and evaluate in detail the use of messenger RNA transcripts that are specific to each type of body fluid and evaluate the use of transcripts with constant degradation rates for determination of the age of biological material (Component B); Discuss the common underlying principles of DNA typing of human and nonhuman DNA and relate this to species testing, genetic linkage and primer design (Component A); Discuss the common underlying principles of population genetics and relate this to the use of frequency databases used in forensic DNA analysis (Component A). 																												
Key Information Sets Information (KIS)	<p>Key Information Sets (KIS) are produced at programme level for all programmes that this module contributes to, which is a requirement set by HESA/HEFCE. KIS are comparable sets of standardised information about undergraduate courses allowing prospective students to compare and contrast between programmes they are</p>																												
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Reading List	<p>https://rl.talis.com/3/uwe/lists/1C8639F9-2C6D-B055-28D4-248B848991AC.html?lang=en-US&login=1</p>																												

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