MODULE SPECIFICATION

Part 1: Information			
Module Title	Forensic Biology		
Module Code	USSKB8-15-2	Level	Level 5
For implementation from	2020-21		
UWE Credit Rating	15	ECTS Credit Rating	7.5
Faculty	Faculty of Health & Applied Sciences	Field	Applied Sciences
Department	HAS Dept of Applied Sciences		
Module type:	Standard		

Pre-requisites	Human Biological Systems 2020-21
Excluded Combinations	Instrumental Analytical Science 2020-21, Medicinal Chemistry 2020-21
Co- requisites	None
Module Entry requirements	None

Part 2: Description

Overview: Pre-requisites: students must have USSJRU-30-1 Human Biological Systems.

Educational Aims: 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.

Outline Syllabus: Identification of biological material:

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: Lecture and tutorial sessions will provide opportunities for data handling and interpretation, problem solving and discussions with academic staff.

Part 3: Assessment

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.

Component A is an online written assessment over a 24 hour period. 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 lectorial sessions. 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.

First Sit Components	**Final Assessment**	**Element weighting**	**Description**
Examination (Online) - Component A	✓	50 %	Online examination (24 hours)
Written Assignment - Component B		50 %	Essay (1500 words)
Resit Components	**Final Assessment**	**Element weighting**	**Description**
Examination (Online) - Component A	✓	50 %	Online Examination (24 hours)
Written Assignment - Component B		50 %	Essay (1500 words)

Part 4: Teaching and Learning Methods

Learning Outcomes

On successful completion of this module students will achieve the following learning outcomes:

Module Learning Outcomes	Reference
Describe and critically assess the use of immunological assays to indicate the presence of body fluids and relate these to sensitivity and specificity	MO1
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	MO2
Discuss the common underlying principles of DNA typing of human and nonhuman DNA and relate this to species testing, genetic linkage and primer design	MO3
Discuss the common underlying principles of population genetics and relate this to the use of frequency databases used in forensic DNA analysis	MO4

Contact Hours

Independent Study Hours:	
Independent study/self-guided study	117
Total Independent Study Hours:	117
Scheduled Learning and Teaching Hours:	
Face-to-face learning	33
Total Scheduled Learning and Teaching Hours:	33
Hours to be allocated	150
Allocated Hours	150

Reading List

The reading list for this module can be accessed via the following link:

https://uwe.rl.talis.com/modules/usskb8-15-2.html

Part 5: Contributes Towards

This module contributes towards the following programmes of study:

Forensic Science {Foundation} [Sep][SW][Frenchay][5yrs] BSc (Hons) 2018-19

Forensic Science {Foundation} [Sep][FT][Frenchay][5yrs] MSci 2018-19

Forensic Science {Foundation} [Sep][SW][Frenchay][6yrs] MSci 2018-19