Module Definition Form (MDF)

Module code: MOD002778	**Version:** 17 **Date Amended:** 21/May/2026

1. Module Title
Biological and Trace Evidence Analysis

2a. Module Leader
Linda King

2b. School
School of Life Sciences

2c. Faculty
Faculty of Science and Engineering

3a. Level
4

3b. Module Type
Standard (fine graded)

4a. Credits
30

4b. Study Hours
300

5. Restrictions

Type	Module Code	Module Name	Condition
Pre-requisites:	None		
Co-requisites:	None		
Exclusions:	None		
Courses to which this module is restricted:	Forensic Science and Crime and Investigative Studies		

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description

The examination of most biological and physical forensic evidence requires an understanding of the characteristics of a wide range of materials. Crime scene examiners and forensic scientists have no way of predicting what evidential types will be available and/or significant when an investigation begins, so all criminalists need a solid foundation of in understanding the source of the main evidence types, and the appropriate method of analysis.

Through a series of integrated lecture and practical sessions, you'll learn the basic principles of biology and human anatomy, focusing on the types of biological evidence that may be associated with forensic cases. You'll explore the principles underlying blood spatter analysis, and the physical properties of the most common types of biological and physical evidence encountered at crime scenes.

You'll also discuss the different types of trace analysis recovered from crime scene and cover the basic principles of a forensic examination, the physical properties of documents, glass fragments (including fracture patterns and optical properties), paint, soil, pollen and vegetation and fingerprints.

Teaching will include a mix of laboratory-based practical sessions and group work based around a case study. These are designed to help you build practical skills and, teamwork and transferrable communication skills that are essential in a professional criminalist context.

6b. Outline Content

- Introduction to biochemistry, cell biology, anatomy and physiology
  - Biomolecules - carbohydrates, lipids, proteins, nucleotides
  - A brief introduction to cell biology and genetics
  - The human skeleton and the musculoskeletal system
  - The circulatory system, respiratory, regulatory and digestive systems
- Biological Evidence
  - Skin and hair - human vs animal
  - Body fluids - semen, sweat, saliva, blood, urine
  - Blood Stain Pattern analysis
- Trace evidence analysis
  - Microscopy for forensics
  - Introduction to forensic botany & palynology
  - Fingermark analysis
  - Hair and Fibre evidence
  - Documents and ink analysis
  - Glass and paint evidence
  - Gun shot residue

6c. Key Texts/Literature

The reading list to support this module is available at: https://readinglists.aru.ac.uk/

6d. Specialist Learning Resources

ForensicNetBase (available electronically via the Digital Library). FORS (available electronically via the Digital Library). Specialist equipment and laboratories in the School of Life Sciences.

7. Learning Outcomes (threshold standards)		
No.	**Type**	**On successful completion of this module the student will be expected to be able to:**
1	Knowledge and Understanding	Explain how the human body works in terms of its structure and function, with specific emphasis on those aspects which contribute biological evidence at crime scenes.
2	Knowledge and Understanding	Identify the nature and significance of a range of biological and trace materials likely to be encountered as evidence at a crime scene.
3	Knowledge and Understanding	Correctly characterise biological and physical evidence using appropriate analytical techniques, with appropriate sample preparation, selection of standards and methodologies.
4	Intellectual, practical, affective and transferrable skills	Undertake and correctly document basic laboratory examinations of biological and trace evidence and interpreting scientific data.
5	Intellectual, practical, affective and transferrable skills	Develop competence in recording of all activities, measurements, deliberations and conclusions in accordance with best-established professional practices, such as the use of contemporaneous notes where relevant.
6	Intellectual, practical, affective and transferrable skills	Work and communicate effectively as a team, assessing the quality of biological and trace evidence used in a real-life case study.

8a. Module Occurrence to which this MDF Refers				
Year	**Occurrence**	**Period**	**Location**	**Mode of Delivery**
2025/6	ZZF	Template For Face To Face Learning Delivery		Face to Face

8b. Learning Activities for the above Module Occurrence			
Learning Activities	**Hours**	**Learning Outcomes**	**Details of Duration, frequency and other comments**
Lectures	38	1-6	19 x 2 hours lectures/active learning
Other teacher managed learning	33	1-6	10 x 2 hrs practicals + 3 hrs revision+8 hrs presentations+2x1hr test
Student managed learning	229	1-6	Private studies including preparation for classes and assessment
TOTAL:	300		

9. Assessment for the above Module Occurrence					
Assessment No.	**Assessment Method**	**Learning Outcomes**	**Weighting (%)**	**Fine Grade or Pass/Fail**	**Qualifying Mark (%)**
010	Coursework	1-6	40 (%)	Fine Grade	30 (%)
In-class tests (2000 word equivalent)					

Assessment components for Element 010				
Component No.	**Assessment Title**	**Submission Method**	**Weighting (%)**	**Components needed for Mark Calculation?**
010/1	Quiz 1	Scheduled Activity: Timetabled assessment task	50 (%)	All
010/2	Quiz 2	Scheduled Activity: Timetabled assessment task	50 (%)	

Assessment No.	**Assessment Method**	**Learning Outcomes**	**Weighting (%)**	**Fine Grade or Pass/Fail**	**Qualifying Mark (%)**
011	Practical	1-6	60 (%)	Fine Grade	30 (%)
Group Presentation (2500 word equivalent)					

In order to pass this module, students are required to achieve an overall mark of 40% (for modules at levels 3, 4, 5 and 6) or 50% (for modules at level 7*).

In addition, students are required to:
(a) achieve the qualifying mark for each element of fine graded assessment as specified above
(b) pass any pass/fail elements

[* the pass mark of 50% applies for all module occurrences from the academic year 2024/25 – see Section 3a of this MDF to check the level of the module and Section 8a of this MDF to check the academic year]