Module Descriptor

Title	Trace Evidence & Microscopy		
Session	2025/26	**Status**	Published
Code	CHEM09008	**SCQF Level**	9
Credit Points	20	**ECTS (European Credit Transfer Scheme)**	10
School	**Computing, Engineering and Physical Sciences**		
Module Co-ordinator	Ciaran Ewins		

Summary of Module

Trace evidence has become crucial to forensic science as techniques such as microscopy and spectroscopy have advanced. This module examines the identification, recovery and interpretation of trace evidene of various types including fibres, glass, gunshot residue, hairs, and selected biological material. Microscopical techniques to gain quantitative and qualitative information from these evidence types are introduced. Forensic entomology and palynology is introduced. The management of scenes of crime to avoid contamination of trace evidence and collection and packaging are covered. Laboratory work is will involve using light and polarising light microscopes to recover and examine trace evidence. The use of infra red and scanning electron microscopy with x-ray analysis of trace materials is also covered.

Those who complete this module will have developed academic competencies in report writing and problem solving and practical knowledge and skills related to research and laboratory work in Forensic Science. Selected practical activities include

- Garment examination and recovery of trace evidence
- Optical microscopy of biological materials, hairs and fibres
- Polarised Light Microscopy of glass, hairs and fibres
- Infra-red spectroscopy of trace evidence
- Scanning Electron Microscopy of GSR

Module Delivery Method	On-Campus[1] ☒	Hybrid[2] ☐	Online[3] ☐	Work -Based Learning[4] ☐
Campuses for Module Delivery	☐ Ayr ☐ Dumfries	☐ Lanarkshire ☐ London ☒ Paisley	☐ Online / Distance Learning ☐ Other (specify)	

Terms for Module Delivery	Term 1	☒	Term 2	☐	Term 3	☐
Long-thin Delivery over more than one Term	Term 1 – Term 2	☐	Term 2 – Term 3	☐	Term 3 – Term 1	☐

Learning Outcomes	
L1	Describe the sources and nature of common trace evidence and the methods available for its collection and study.
L2	Demonstrate a critical understanding of the principals and terminology of forensic microscopy and the operation of light and electron microscopes.
L3	Describe of the principles of infra red microscopy/spectroscopy and be able to apply this technique to the identification of routine fibres types.
L4	Show skill in the handling of trace evidence and in the use of optical microscopy to study and characterise trace evidence including geological, biological and fibre materials
L5	

Employability Skills and Personal Development Planning (PDP) Skills	
SCQF Headings	**During completion of this module, there will be an opportunity to achieve core skills in:**
Knowledge and Understanding (K and U)	**SCQF 9** A broad and integrated knowledge of the role of microscopy in forensic science and the variety of microscopic methods available. A broad knowledge of the sources and uses of different type of trace evidence including hairs, fibres, glass, gunshot residue and biological material. A detailed understanding of the contamination issues in evidence

[1] Where contact hours are synchronous/ live and take place fully on campus. Campus-based learning is focused on providing an interactive learning experience supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus contact hours will be clearly articulated to students.

[2] The module includes a combination of synchronous/ live on-campus and online learning events. These will be supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus and online contact hours will be clearly articulated to students.

[3] Where all learning is solely delivered by web-based or internet-based technologies and the participants can engage in all learning activities through these means. All required contact hours will be clearly articulated to students.

[4] Learning activities where the main location for the learning experience is in the workplace. All required contact hours, whether online or on campus, will be clearly articulated to students

	handling, packaging and recovery.
Practice: Applied Knowledge and Understanding	**SCQF 9** A detailed knowledge of polarized light and compound microscope methods used to investigate trace materials. Be able to carry out the routine methods of infra red spectroscopy to identify and compare fibres. Techniques used to recover trace evidence Issues related to the interpretation of trace evidence
Generic Cognitive skills	**Please select SCQF Level** Undertake analysis of information form spectroscopic and microscopic examination of evidence Formulate approaches to dealing with evidence containing trace materials Analyse the presentation of trace evidence in court and ways that its use can be questioned
Communication, ICT and Numeracy Skills	**Please select SCQF Level** Present information from evidence examination in notes, sketches, reports and photographs Use Microsoft Office applications to prepare reports and presentations.
Autonomy, Accountability and Working with Others	**Please select SCQF Level** Demonstrate initiative and judgement in deciding how to deal with evidence Show a professional approach to the interpretation of information from trace evidence.

Prerequisites	**Module Code** CHEM07013	**Module Title** Molecules of Life
	Other Suitable alternative	
Co-requisites	**Module Code**	**Module Title**

Learning and Teaching	
In line with current learning and teaching principles, a 20-credit module includes 200 learning hours, normally including a minimum of 36 contact hours and maximum of 48 contact hours.	
Learning Activities During completion of this module, the learning activities undertaken to achieve the module learning outcomes are stated below:	**Student Learning Hours** (Note: Learning hours include both contact hours and hours spent on other learning activities)
Lecture / Core Content Delivery	24
Laboratory / Practical Demonstration / Workshop	24
Independent Study	152
Please select	
Please select	

Please select	
TOTAL	200

Indicative Resources
The following materials form essential underpinning for the module content and ultimately for the learning outcomes: Andrew Jackson and Julie Jackson, Forensic Science, 4th Ed., Pearson Education Ltd. (2017) ISBN 978-1-292-08818-1 Brian Caddy (ed) Forensic Examination of Glass and Paint - Analysis and Interpretation (2001), publ. Taylor & Francis Forensic Science Series, isbn 0-203-48358-8 James Robertson and Micheal Grieve (ed) Forensic Examination of Fibres 2nd Ed, (1999) , publ. Taylor and Francis, isbn 0-7484-0816-9
(N.B. Although reading lists should include current publications, students are advised (particularly for material marked with an asterisk*) to wait until the start of session for confirmation of the most up-to-date material)

Attendance and Engagement Requirements
In line with the Student Attendance and Engagement Procedure, Students are academically engaged if they are regularly attending and participating in timetabled on-campus and online teaching sessions, asynchronous online learning activities, course-related learning resources, and complete assessments and submit these on time. **For the purposes of this module, academic engagement equates to the following:** The School of Computing, Engineering and Physical Sciences considers attendance and engagement to mean a commitment to attending, and engaging in, timetabled sessions. You will scan your attendance via the scanners each time you are on-campus and you will login to the VLE several times per week. Where you are unable to attend a timetabled learning session due to illness or other circumstance, you should notify the Programme Leader that you cannot attend. Across the School an 80% attendance threshold is set. If you fall below this, you will be referred to the Student Success Team to see how we can best support your studies.

Equality and Diversity
The University's Equality, Diversity and Human Rights Procedure can be accessed at the following link: UWS Equality, Diversity and Human Rights Code. Aligned with the University's commitment to equality and diversity, this module supports equality of opportunity for students from all backgrounds and learning needs. Using the VLE, material will be presented electronically in formats that allow flexible access and manipulation of content. This module complies with University regulations and guidance on inclusive learning and teaching practice. This module has lab-based teaching and as such you are advised to speak to the Module Co-ordinator to ensure that specialist assistive equipment, support provision and adjustment to assessment practice can be put in place, in accordance with the University's policies and regulations.
(N.B. Every effort will be made by the University to accommodate any equality and diversity issues brought to the attention of the School)

Supplemental Information

Divisional Programme Board	**Engineering Physical Sciences**
Overall Assessment Results	☐ **Pass / Fail** ☒ **Graded**
Module Eligible for Compensation	☒ **Yes** ☐ **No** **If this module is eligible for compensation, there may be cases where compensation is not permitted due to programme accreditation requirements. Please check the associated programme specification for details.**
School Assessment Board	Physical Sciences
Moderator	Callum McHugh
External Examiner	TBC
Accreditation Details	This module is part of programmes Accredited and recognised by the Chartered Society of Forensic Sciences
Module Appears in CPD catalogue	☐ **Yes** ☒ **No**
Changes / Version Number	

Assessment (also refer to Assessment Outcomes Grids below)
Assessment 1
Assessment 1 – Lab Reports 60%
Assessment 2
Assessment 2 – Class Tests 40%
Assessment 3
(N.B. (i) Assessment Outcomes Grids for the module (one for each component) can be found below which clearly demonstrate how the learning outcomes of the module will be assessed. (ii) An indicative schedule listing approximate times within the academic calendar when assessment is likely to feature will be provided within the Student Module Handbook.)

Component 1							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Lab Reports	☒	☒	☒	☒	☒	60	

Component 2							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Class test	☒	☒	☒	☒	☒	40	1

Component 3

Assessment Type	LO1	LO2	LO3	LO4	LO5	Weighting of Assessment Element (%)	Timetabled Contact Hours
	☐	☐	☐	☐	☐		
Combined total for all components						100%	hours

Change Control

What	When	Who