Module specification

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Module Code	SCI649
Module Title	Emerging Technology & Digital Forensics
Level	6
Credit value	20
Faculty	FAST
HECoS Code	100385
Cost Code	GAFS

Programmes in which module to be offered

Programme title	Is the module core or option for this programme
BSc (Hons) Forensic Science	Core
BSc (Hons) Forensic Science with Placement Year	Core

Pre-requisites

None.

Breakdown of module hours

Learning and teaching hours	12 hrs
Placement tutor support	0 hrs
Supervised learning e.g. practical classes, workshops	12 hrs
Project supervision (level 6 projects and dissertation modules only)	0 hrs
Total active learning and teaching hours	**24** hrs
Placement / work based learning	0 hrs
Guided independent study	176 hrs
Module duration (total hours)	200 hrs

Module aims

The aim of this module is to introduce students to software and techniques used in digital forensics. Students will gain practical experience in recovering photographs from memory cards, as well as extracting geolocation and camera information from JPEG files and other digital techniques. Students will also be exposed to emerging technologies and their potential uses in both forensic investigations and research.

Module Learning Outcomes - at the end of this module, students will be able to:

1	Design an experiment surrounding a selected piece of emerging technology.
2	Author a grant application and justify the need for a selected piece of equipment/software.
3	Examine and interpret a range of digital evidence from given scenario.
4	Formulate an industry standard report on findings from a given scenario.

Assessment

Indicative Assessment Tasks:
This section outlines the type of assessment task the student will be expected to complete as part of the module. More details will be made available in the relevant academic year module handbook.

Assessment 1: Written Assignment (~1500 words)
Students will prepare a grant application based around a piece of emerging technology of their choice.

Assessment 2: Written Assignment (~1500 words)
Students will participate in a digital forensic simulation where they will produce an industry style report on their findings.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)
1	1-2	Written Assignment	50
2	3-4	Written Assignment	50

Derogations

None.

Learning and Teaching Strategies

The module will be delivered in line with the University's Active Learning Framework and will involve:
Lectures: To provide students with a comprehensive overview of the key concepts and principles.
Discussions and Seminars: To allow students to engage with the materials and explore different perspectives on the applications of emerging technologies in forensic science while also providing an opportunity for students to ask questions and clarify concepts.
Online resources and videos: To supplement classroom learning by providing students with additional information and visual aids to further their understanding of the materials.
Self-directed study: To empower students to take responsibility for their own learning and to explore topics of interest in more depth.

Indicative Syllabus Outline

- The main facial identification techniques used in criminal investigations
- Methods used in digital image forensics and their implementation in the computer software
- Legislation to enforce appropriate computer use
- Identification, preservation, extraction and analysis of digital evidence
- 3D technology and its applications in forensic anthropology
- 3D scanning
- Utilisation of Phenylketonuria (PKU) cards in forensic investigation
- Case studies on the emerging technologies for the analysis of forensic trace evidence in major and volume crimes

Indicative Bibliography:

Please note the essential reads and other indicative reading are subject to annual review and update.

Essential Reads
Johansen, G. (2020), *Digital forensics and incident response: Incident response techniques and procedures to respond to modern cyber threats,* Birmingham: Packt Publishing.

Other indicative reading
Francese, S. (2019), *Emerging Technologies for the Analysis of Forensic Traces*. Heidelberg: Springer.
Hummert, C. & Pawlaszczyk, D. (2022), *Mobile Forensics – The File Format Handbook: Common File Formats and File Systems Used in Mobile Devices*, Cham: Springer Nature.
Baldini, G., Amerini, I. & Francesco, L. (2022), *Image and Video Forensics.* Basel: MDPI - Multidisciplinary Digital Publishing Institute.
Johnson, R. (2018), *Emerging and Advanced Technologies in Diverse Forensic Sciences*, Abingdon: Taylor & Francis.

Employability skills – the Glyndŵr Graduate

Each module and programme is designed to cover core Glyndŵr Graduate Attributes with the aim that each Graduate will leave Glyndŵr having achieved key employability skills as part of their study. The following attributes will be covered within this module either through the content or as part of the assessment. The programme is designed to cover all attributes and each module may cover different areas.

Core Attributes
Engaged
Enterprising
Creative
Ethical

Key Attitudes
Commitment
Curiosity

Practical Skillsets
Digital Fluency
Organisation
Critical Thinking
Communication