



Module Definition Form (MDF)

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| Module code: MOD003121 | Version: 4 Date Amended: 22/May/2025 |
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| 1. Module Title |
| Ethical Hacking and Countermeasures |

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| 2a. Module Leader |
| Segun Popoola |

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| 2b. School |
| School of Computing and Information Sciences |

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| 2c. Faculty |
| Faculty of Science and Engineering |

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| 3a. Level |
| 6 |

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| 3b. Module Type |
| Standard (fine graded) |

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| 4a. Credits |
| 15 |

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| 4b. Study Hours |
| 150 |

| 5. Restrictions | | | |
|--|-------------|-------------|-----------|
| Type | Module Code | Module Name | Condition |
| Pre-requisites: | None | | |
| Co-requisites: | None | | |
| Exclusions: | None | | |
| Courses to which this module is restricted: | None | | |

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description

Studying this module will give you a rounded introduction to the principles of ethical hacking from both a theoretical and technical perspective. As part of your studies you will be given a contextual setting for ethical hacking by an examination of the issues associated with systems security, cybercrime and the criminal justice system i.e. Computer Misuse Act.

Within a mixture of lectures. Demonstrations and practical sessions you will be introduced to the basic principles of ethical hacking and the role ethical hacking plays in providing more secure and robust information to support computer systems and networks (including wireless networks). Will involve being exposed to, and use, the basic tools and techniques of ethical hacking, particularly in regard to penetration testing and systems security within a safe and sandboxed environment.

You will be provided with opportunities to develop academic skills in report writing and evidence based demonstrations. By research and application you will develop the skills to manage the particular legal, ethical and professional challenges, facing the Information Security practitioner with particular reference to the criminal justice system in England and Wales and the Computer Misuse Act.

6b. Outline Content

Compulsory elements of this module content will be : - Ethics and Legality i.e. Misuse of Computers Act, British Computer Society professional guidelines. - Develop an understanding of the fundamental principles of systems security, particularly in relation to weaknesses and vulnerabilities. - Security policy development - Define how ethical hacking relates to, and makes use of, the underpinning theories and principles of computing and engineering. Due to the dynamic nature of Computing further content will reflect the latest developments in security related topics. These will typically be, but not limited to: - Denial of Service, Firewalls, Honeypots, Web based attacks and prevention - Malware e.g. Trojans, Bots and prevention - Penetration Testing and network security

6c. Key Texts/Literature

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

6d. Specialist Learning Resources

Secure laboratory environment i.e. isolated PCs and network, for investigation of threat methodologies and defensive strategy evaluation through the use of virtual machine sandboxes. This would be currently achievable using a combination of Netlab (through a networked Web browser) and an isolated lab such as our Cisco networking lab.

| 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 | Evidence awareness of comprehensive knowledge of Computer Security and attack and countermeasure, and can incorporate these factors into a major piece of work. |
| 2 | Knowledge and Understanding | Analyse and exhibit comprehensive knowledge of 'professional' codes of conduct incorporated into a major piece of work. |
| 3 | Intellectual, practical, affective and transferrable skills | Critically evaluate evidence / research in order to support personal conclusions/recommendations while reviewing validity and significance. |
| 4 | Intellectual, practical, affective and transferrable skills | Demonstrate confidence and flexibility in identifying and defining complex problems and the application of appropriate knowledge, tools/methods to their resolution. |

| 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 | | | |
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| Learning Activities | Hours | Learning Outcomes | Details of Duration, frequency and other comments |
| Lectures | 12 | 1,2,4 | Logbook and Lab. work provide opportunities for Formative Feedback |
| Other teacher managed learning | 24 | 1,2,3 | Logbook and Lab. work provide opportunities for Formative Feedback |
| Student managed learning | 114 | 1-4 | Case Study plus logbook/lab. work support development in these elements. |
| TOTAL: | 150 | | |

9. Assessment for the above Module Occurrence

| Assessment No. | Assessment Method | Learning Outcomes | Weighting (%) | Fine Grade or Pass/Fail | Qualifying Mark (%) |
|-----------------------|--------------------------|--------------------------|----------------------|--------------------------------|----------------------------|
| 010 | Coursework | 1-4 | 100 (%) | Fine Grade | 30 (%) |

Case Study and Analysis Report (2500 words 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]