

Module Details	
Module Title	Network Security
Module Code	COS7055-B
Academic Year	2023/4
Credits	20
School	Engineering and Informatics (Faculty-wide)
FHEQ Level	FHEQ Level 7

Contact Hours	
Type	Hours
Laboratories	To give an overview of the different types of communication and computer networks currently in use and give an insight into their operational features. To highlight the concepts of network performance analysis and introduce network security concepts, principles and theories.
Directed Study	164
Lectures	24
Laboratories	12
Laboratories	Introduction to networking and network topologies; TCP/IP protocol stack; Network security goals; access framework: authorisation, authentication, and availability; attack types: network level, application level and social Engineering attacks; attacker models; vulnerability detection and analysis; network defence frameworks; Legal issues have been introduced as a topic in this module.
Laboratories	The basic underpinning material is covered in the lectures. The tutorials demonstrate how the lecture material can be applied by the process of working through examples, with lab sessions to simulate networks.

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Semester 1

Module Aims
To give an overview of the different types of communication and computer networks currently in use and give an insight into their operational features. To highlight the concepts of network performance analysis and introduce network security concepts, principles and theories.

Outline Syllabus

Introduction to networking and network topologies; TCP/IP protocol stack; Network security goals; access framework: authorisation, authentication, and availability; attack types: network level, application level and social Engineering attacks; attacker models; vulnerability detection and analysis; network defence frameworks; Legal issues have been introduced as a topic in this module.

Learning Outcomes

Outcome Number	Description
LO1	Demonstrate a systematic understanding of the multilevel protocol stacks used in contemporary networks and attacker models to understand the principle of secure communication.
LO2	Demonstrate a critical awareness of the limitations of specific types of networks and attack models. You will also be able to understand how the performance and security of network communication can be evaluated and how to conduct research into specific aspects of networks.
LO3	Demonstrate ability to use appropriate techniques to assess network vulnerabilities and implement adequate security measures to protect assets of interest.

Learning, Teaching and Assessment Strategy

The basic underpinning material is covered in the lectures. The tutorials demonstrate how the lecture material can be applied by the process of working through examples, with lab sessions to simulate networks.

Theoretical understanding will be assessed by

- a. Closed book examination (80%) to assess the knowledge and, problem-solving skills and application of concepts to various real-time network security challenges.
- b. Coursework (20%) to assess practical skills for analysing real-time network traffic to generate skills. This part of the assessment is based on the lab exercises and requires submitting an individual report for the given network traffic scenario. The maximum word count is 2000.

Mode of Assessment

Type	Method	Description	Weighting
Summative	Coursework	Analysis of network traffic to understand various protocols and detect malicious packets. 2000 words	20%
Summative	Examination - Closed Book	Closed book examination- 3 hours	80%

Reading List

To access the reading list for this module, please visit <https://bradford.rl.talis.com/index.html>

Please note:

This module descriptor has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but minor changes may occur given the interval between publishing and commencement of teaching. Upon commencement of the module, students will receive a handbook with further detail about the module and any changes will be discussed and/or communicated at this point.

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