

Module Details	
Module Title	Cyber Physical Systems Security
Module Code	COS7051-B
Academic Year	2023/4
Credits	20
School	Department of Computer Science
FHEQ Level	FHEQ Level 7

Contact Hours	
Type	Hours
Lectures	12
Laboratories	24
Directed Study	164

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Semester 2

Module Aims
<p>Cyber Physical Systems such as robotic systems, medical devices and self-driving cars play an increasingly important role in our everyday life. However, they created new cyber security risks that can have a significant impact on human lives, industry, critical infrastructure and environment. Therefore, it is critical to provide effective solutions for eliminating the security vulnerabilities of Cyber Physical Systems and preventing cyber attacks.</p> <p>This module aims to develop a comprehensive understanding of the underlying technologies for Cyber Physical Systems Security and a critical awareness of the overhead, impact and relative value of the protection offered.</p>

Outline Syllabus
<p>Fundamental concepts of cyber security; cyber-physical systems, IOT and cloud security threats and protection; network traffic monitoring and analysis methods; intrusion detection systems; vulnerability analysis, security mechanisms and techniques for preventing, detecting and mitigating attacks.</p>

Learning Outcomes	
Outcome Number	Description
LO1	Develop a systematic understanding and critical awareness of the security threats affecting Cyber Physical Systems and the mechanisms to prevent, detect and mitigate attacks.
LO2	Identify and evaluate appropriate solutions for building secure Cyber Physical Systems; apply advanced techniques and tools to deal with cross-cutting security issues applicable to different domains.
LO3	Demonstrate advanced skills in research, problem solving and communication; be a self-directed, independent learner showing initiative and personal responsibility.

Learning, Teaching and Assessment Strategy
<p>Formal input provided by lectures, supported by practical problems discussed and solved in lab sessions, and student directed reading. Practical examples used, where appropriate, to illustrate security issues in Cyber Physical Systems and how to mitigate or resolve them.</p> <p>Formal input provided by lectures, supported by practical problems discussed and solved in lab sessions, and student directed reading. Practical examples used, where appropriate, to illustrate security issues in Cyber Physical Systems and how to mitigate or resolve them.</p>

Mode of Assessment			
Type	Method	Description	Weighting
Summative	Coursework	Lab report (4000 words).	100%
Formative		During the lab sessions students are given feedback on the exercises that they completed, in order for them to identify areas for improvement.	N/A

Reading List
To access the reading list for this module, please visit <a href="https://bradford.rl.talis.com/index.html">https://bradford.rl.talis.com/index.html</a>

*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.*