CS915-15 Advanced Computer Security

22/23

Department
Computer Science
Level
Taught Postgraduate Level
Module leader
Feng Hao
Credit value
15
Module duration
10 weeks
Assessment
Multiple
Study location
University of Warwick main campus, Coventry

Description

Introductory description

The module aims to provide students with a thorough grounding in computer security from a system wide perspective, including language-based security, operating system security and network security, and to provide an enhanced and detailed understanding of selected advanced topics of current importance, such as quantum cryptography, proof-carrying code, etc.

Module aims

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Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

Threats and Security policy models.
Security automata, edit automata
Network security: Firewall design.
Distributed system security.
Fair exchange.
Bitcoin.
Source location privacy.

Learning outcomes

By the end of the module, students should be able to:

- Understand the various security concepts such as confidentiality, privacy etc.
- Understand various security models.
- Understand the notion of security policy enforcement and classes of policies that runtime enforceable.
- Understand notions of security in E-commerce.
- Understand source location privacy in wireless sensor networks.
- Understand the technologies and techniques that support bitcoin.
- Understand the workings of firewalls.
- Understand security in distributed systems.

Indicative reading list

Please see Talis Aspire link for most up to date list.

View reading list on Talis Aspire

Subject specific skills

CIA, threat modelling, authentication, security models, access control, symmetric cryptography, asymmetric cryptography, software security, web security, OS security, hardware security

Transferable skills

Able to critically analyze security systems identifying flaws, and able to build secure systems theoretically and practically

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Study

Study time

Type	Required
Lectures	30 sessions of 1 hour (20%)
Total	150 hours

Type	Required
Practical classes	2 sessions of 1 hour (1%)
Private study	118 hours (79%)
Total	150 hours

Private study description

Background reading, secure programming practice, revision

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Students can register for this module without taking any assessment.

Assessment group D4

	Weighting	Study time
Written report	30%	
Written report. Roughly 2000 words, 6 page hard limit. This assignment is worth more than 3 CATS and is not, therefore, eligible for self-certification.		
In-person Examination	70%	
CS915 exam		

- Answerbook Pink (12 page)

Assessment group R1

	Weighting	Study time
In-person Examination - Resit	100%	
CS915 resit exam		

- Answerbook Pink (12 page)

Feedback on assessment

Individual written feedback on each assignment

Past exam papers for CS915

Availability

Courses

This module is Optional for:

- TCSA-G5PD Postgraduate Taught Computer Science
  - Year 1 of G5PD Computer Science
  - Year 1 of G5PD Computer Science
- Year 1 of TCSA-G5PA Postgraduate Taught Data Analytics