WM143-24 Networks, Communications and Cyber Defence

22/23

Department
> WMG

Level
> Undergraduate Level 1

Module leader
> Peter Norris

Credit value
> 24

Module duration
> 30 weeks

Assessment
> Multiple

Study location
> University of Warwick main campus, Coventry

Description

Introductory description

The Internet and computer networks are now ubiquitous and a growing number of computing activities strongly depend on the correct operation of the underlying network. Networks, both fixed and mobile, are a key part of the computing environment of today and tomorrow. Many computing applications that are used today would not be possible without networks. This dependency on the underlying network is likely to increase in the future. This module develops theoretical understanding of core networks and communications concepts, instantiation of these concepts in the dominant suite of protocols comprising Ethernet, Internet Protocol (IP), Transmission Control Protocol (TCP) and User Datagram Protocol (UDP), the practical realisation of devices to operate these protocols (switches, routers and firewalls in particular) and the cyber consequences of the organisation and configuration of these devices.

Module aims

1 – articulate the key principles behind the organisation and operation of typical communication networks and layered protocols using domain terminology.
2 - configure network devices to achieve required operating characteristics.
3 - explain network behaviour from captured network traffic.

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.

Outline content
The content of this module will be taught from a cyber security perspective.

- introduction
- networked applications
- reliable data delivery
- routing and forwarding
- local area networks
- resource allocation
- mobility

Learning outcomes

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

- 1 – articulate the key principles behind the organisation and operation of typical communication networks and layered protocols using domain terminology.
- 2 - configure network devices to achieve required operating characteristics.
- 3 - explain network behaviour from captured network traffic.

Indicative reading list

Donahue, Gary A., "Network Warrior", O'Reilly (2011)

IETF, "IETF Request for Comments (RFC)", https://www.ietf.org/rfc.html [accessed Jan 13 2017]

Kozeriok, Charles M., "TCP/IP Guide: A Comprehensive, Illustrated Internet Protocols Reference", No Starch Press (2005)

Subject specific skills

1 – articulate the key principles behind the organisation and operation of typical communication networks and layered protocols using domain terminology.
2 - configure network devices to achieve required operating characteristics.
3 - explain network behaviour from captured network traffic.

Transferable skills

Problem solving

Study

Study time

Type	Required
Supervised practical classes	18 sessions of 3 hours (22%)
Private study	60 hours (25%)
Assessment	126 hours (52%)
Total	240 hours

Private study description

Independent activity between workshops.

Costs

No further costs have been identified for this module.

Assessment

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

Assessment group A1

	Weighting	Study time
Coursework 1	30%	38 hours
Coursework 2	20%	25 hours
Coursework 3	50%	63 hours

Assessment group R

	Weighting	Study time
Coursework	100%	

Feedback on assessment

Written feedback for each assignment
Verbal feedback during tutorial sessions
Solutions provided to tutorial questions
Summative feedback on assignments and exam

Availability

Courses

This module is Core for:

- UWMA-H651 Undergraduate Cyber Security
  - Year 1 of H651 Cyber Security
  - Year 1 of H651 Cyber Security
  - Year 1 of H651 Cyber Security