Liverpool John Moores University

Title: NETWORK SECURITY
Status: Definitive
Code: **6013SUMCOM**   (118830)
Version Start Date: 01-08-2011

Owning School/Faculty: Computing and Mathematical Sciences
Teaching School/Faculty: Computing and Mathematical Sciences

Team	emplid	Leader
Robert Askwith		Y

Academic Level:	FHEQ6	**Credit Value:**	12.00	**Total Delivered Hours:**	38.00
Total Learning Hours:	120	**Private Study:**	82		

Delivery Options
Course typically offered: Summer

Component	Contact Hours
Lecture	12.000
Practical	12.000
Tutorial	12.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS2	Examination	75.0	2.00
Report	AS1	Report	25.0	

Aims

To develop an understanding of various security vulnerabilities in and threats to computer networks as well as the importance of network security.
To assess critically a variety of generic security technologies for protection of computer networks.
To promote the use of appropriate security techniques to solve network security problems.

Learning Outcomes

After completing the module the student should be able to:

1 Explain a variety of generic security threats and vulnerabilities, and identify and analyse particular security problems for a given application.
2 Evaluate the importance of cryptographic techniques.
3 Demonstrate the knowledge of security protocols and mechanisms for the provision of security services needed for secure networked applications.
4 Apply appropriate security techniques to solve network security problems.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Exam   1   2   3

Report   2   4

Outline Syllabus

Fundamentals of network security: security concepts, security policies, security threats and vulnerabilities, viruses, and importance of network security and its applications.

Cryptographic techniques: conventional cryptography (e.g. DES), public-key cryptography (e.g. RSA), digital signatures (e.g. DSA), and applications of cryptography.

Security services: message integrity, confidentiality and authentication, and key certification and management.

Access control in computer networks: authentication protocols and services (e.g. Kerberos), intrusion detection, firewalls and virtual private networks.

Network security applications: IP security (e.g. IPSec), web security (e.g. SSL/TLS), e-mail security, and e-payment systems (e.g. SET).

Learning Activities

The syllabus will be delivered by a combination of Lectures, Tutorials, and Laboratory practical work, as well as guided reading.

References

Course Material	Book
Author	Stallings, W.
Publishing Year	2007
Title	Network Security Essentials
Subtitle	
Edition	3rd Edition
Publisher	Prentice-Hall
ISBN	0132380331

Course Material	Book
Author	Stallings, W., Brown, L.
Publishing Year	2008
Title	Computer Security: Principles and Practice
Subtitle	
Edition	
Publisher	Prentice-Hall
ISBN	9780136004240

Course Material	Book
Author	Pfleeger, C., Pfleeger, S.
Publishing Year	2003
Title	Security in Computing
Subtitle	
Edition	3rd Edition
Publisher	Prentice-Hall
ISBN	0130355488

Course Material	Book
Author	Tibbs, R. and Oakes, E.
Publishing Year	2006
Title	Firewalls and VPNs: Principles and Practices
Subtitle	
Edition	
Publisher	Prentice-Hall
ISBN	0131547313

Course Material	Book
Author	Rescorla, E.
Publishing Year	2000
Title	SSL and TLS: Designing and Building Secure Systems
Subtitle	
Edition	
Publisher	Addison-Wesley
ISBN	0-201-61598-3.

Course Material	Book
Author	Ford, W. and Baum, M

Publishing Year	2000
Title	Secure Electronic Commerce: Building the Infrastructure for Digital Signature and Encryption
Subtitle	
Edition	2nd Edition
Publisher	Prentice Hall
ISBN	0-13-027276-0

Course Material	Book
Author	Day, K
Publishing Year	2003
Title	Inside the Security Mind: Making Tough Decisions
Subtitle	
Edition	
Publisher	Prentice Hall
ISBN	0131118293

Course Material	Book
Author	Crume, J.
Publishing Year	2001
Title	Inside Internet Security: What Hackers Don't Want You To Know
Subtitle	
Edition	
Publisher	Pearson Education
ISBN	0201-67516-1

Course Material	Book
Author	Phaltankar, K.M.
Publishing Year	2000
Title	Implementing Secure Intranets and Extranets
Subtitle	
Edition	
Publisher	Artech House Publishers
ISBN	0-89006-447-4

Course Material	Book
Author	E. D. Zwicky, et al
Publishing Year	2000
Title	Building Internet Firewalls
Subtitle	
Edition	2nd Edition
Publisher	O'Reilly
ISBN	1-56592-871-7

Course Material	Book
Author	

Publishing Year	0
Title	IEEE Security & Privacy
Subtitle	
Edition	
Publisher	
ISBN	

Course Material	Book
Author	
Publishing Year	0
Title	IEEE Network Magazine
Subtitle	
Edition	
Publisher	
ISBN	

Course Material	Book
Author	
Publishing Year	0
Title	IEEE Communications Magazine
Subtitle	
Edition	
Publisher	
ISBN	

Course Material	Book
Author	
Publishing Year	0
Title	ACM Transactions on Information and System Security
Subtitle	
Edition	
Publisher	
ISBN	

Course Material	Book
Author	
Publishing Year	0
Title	IEEE Transactions on Dependable and Secure Computing
Subtitle	
Edition	
Publisher	
ISBN	

Course Material	Book
Author	
Publishing Year	0
Title	Journal of Computer Security

Subtitle	
Edition	
Publisher	
ISBN	

Notes

The spectacular growth of the Internet has spawned a great demand for awareness of security threats to computer networks and application of security techniques to network protection. In response to the demand, this module examines various security issues and solutions to network protection.