

Subject Description Form

Subject Code	COMP 5353
Subject Title	Internet Security: Principles and Practice
Credit Value	3
Level	5
Pre-requisite/ Exclusion	<p>Prerequisite: COMP2322 Computer Networking or COMP4322 Internetworking Protocol Software and Management or equivalent knowledge of computer network.</p> <p>Exclusion: COMP5351 Internet Infrastructure Security</p>
Objectives	<p>The overall objective of this course is to equip students with foundational principles and practical skills on security issues relevant to the current Internet infrastructure, such as</p> <ol style="list-style-type: none"> 1. The three main cryptographic functions: secret key, public key, and hash; 2. The four main network security services: secrecy, message integrity, authentication, and nonrepudiation; and 3. Public key infrastructure, IP network security, SSL/TLS, web server and browser security, system security, and network intrusion and defense.
Intended Learning Outcomes	<p>Upon successful completion of this course, students should be able to:</p> <ol style="list-style-type: none"> a) Read and understand articles in professional computer and network security magazines, such as IEEE Security & Privacy and SC Magazine. b) Use Wireshark to analyze network attacks; build, design, and test the security of web applications and web services; and perform basic site penetration tests. c) Take on a self-study on more advanced network security topics that require foundational understanding of cryptographic algorithms and security of network protocols.
Subject Synopsis/ Indicative Syllabus	<ul style="list-style-type: none"> • Cryptographic preliminaries: threat analysis, security goals, security verses privacy, basic cryptographic functions, public key infrastructure, and digital signatures • IP network and end-to-end security: IP Security, Internet Key Exchange, routing security, SSL/TLS, and TCP security • Web and system security: Windows and Linux systems security, web server security, and OWASP top 10 vulnerability for web services • Network intrusions: Intrusion detection and prevention, site penetration tests, firewalls, stateful inspection

Teaching/Learning Methodology	Class activities, including lectures, tutorials, workshops, and guest seminars																							
Assessment Methods in Alignment with Intended Learning Outcomes	<table border="1"> <thead> <tr> <th rowspan="2">Specific Assessment Methods/Tasks</th> <th rowspan="2">% weighting</th> <th colspan="3">Intended subject learning outcomes to be assessed</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> </tr> </thead> <tbody> <tr> <td>Assignments, Tests & Projects</td> <td>55</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>Final Examination</td> <td>45</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>Total</td> <td>100</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Specific Assessment Methods/Tasks	% weighting	Intended subject learning outcomes to be assessed			a	b	c	Assignments, Tests & Projects	55	✓	✓	✓	Final Examination	45	✓	✓	✓	Total	100			
	Specific Assessment Methods/Tasks			% weighting	Intended subject learning outcomes to be assessed																			
		a	b		c																			
	Assignments, Tests & Projects	55	✓	✓	✓																			
	Final Examination	45	✓	✓	✓																			
Total	100																							
Student study effort expected	Class Contact:																							
	Class activities (lecture, tutorial, lab) 39 hours																							
	Other student study effort:																							
	Assignments, Quizzes, Projects, Exams 65 hours																							
	Total student study effort 104 hours																							
Reading list and references	<p>(1) R. Anderson. Security Engineering, Second Edition, Wiley, 2008.</p> <p>(2) M. Bishop. Introduction to Computer Security, Addison Wesley, 2005.</p> <p>(3) B. Chapman and E. Zwicky. Building Internet Firewalls. Second Edition, O'Reilly & Associates, 2000.</p> <p>(4) N. Ferguson, B. Schneier, and T. Kohno. Cryptography Engineering, Wiley, 2010.</p> <p>(5) C. Kaufman, R. Perlman, and M. Speciner. Network Security: Private Communication in a Public World, Second Edition, Prentice Hall PTR, 2002.</p> <p>Supplementary articles from IEEE/ACM publications</p>																							