

Course Content

Course Title (English)	Practicum of Attacking and Defense of Network Security
Course Title (Chinese)	網路攻防實習
Credit	3
Instructor	Prof. Tsung-Nan Lin 林宗男 教授
Outline	<p>Practicum is traditionally referenced as a course of supervised study in a professional field. In the context of computing education, it is also used for practices at a lab environment which emulates the real world situation. With the advancement of computing technology, a lab environment could be a physical lab or a virtual lab.</p> <p>This is a practicum course of computer network security where students will learn to create a virtual computing network environment. Students will then use open source tools to create different attacking scenarios and then implement defense solutions to protect the network from those attacks. A major learning outcome is to design an enterprise network with security consideration to protect from various hacking and intrusion attacks. The course starts with a brief review of security requirements and then emerges students in various security tools to experiment on various attacking and defense scenarios.</p> <p>PREREQUISITE (knowledge): (1) TCP/IP protocols, (2) Linux operating system, and (c) one programming language course (C++ or Python is preferred)</p>
Goal	1. Specify security requirements in an enterprise environment. Distinguish and classify security attacks in four major categories: eavesdropping, authentication, integrity, and availability.

	<p>2. Design the enterprise network for maximal security protection</p> <p>3. Identify vulnerabilities in network protocols.</p> <p>4. Practice Open-Source tools to emulate various security attacks.</p> <p>5. Configure network device (e.g., firewall) to protect and defend security attacks.</p> <p>6. Design, configure, and build Virtual Private Network (VPN) which can be adopted in a real enterprise environment. Experiment with different encryption algorithms to evaluate the effectiveness of security protection.</p>
English Teaching	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
Teaching Material	<input checked="" type="checkbox"/> English <input type="checkbox"/> Chinese