HANYANG UNIVERSITY
INTERNATIONAL SUMMER SCHOOL

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Home University	Telkom University
Department	Electrical Engineering

Course Title	Computer Networks
Field of Study	Engineering
Credits	3
Contact Hours	45
Course Code/Number	ISS1165
Course Description	This course discusses about how the computer network works, including several application protocols, such as HTTP, SMTP, DNS, and their secured channel using mostly practical approach. Followed by security aspect, including Firewall, Bandwidth Management, Proxy, and VPN.
Course Objective	- Students should be able to explain how computer network works in term of TCP/IP stack and 7 OSI layers (tools: Cisco Packet Tracer and Virtual Machine) - Students should be able to setup and configure web and mail service and how to secure them using FreeBSD or Linux - Students should be able to setup and configure Firewall using FreeBSD or Linux - Students should be able to setup and configure HTTP Proxy and Bandwidth Management and secure the channel using VPN
Preparations (Pre-Knowledge)	Basic Computer Literacy and Understanding on Python Programming is needed but not mandatory
Materials (Textbook/Websites link)	1. Andrew S. Tanenbaum and David J. Wetherall, "Computer Networks, Fifth Edition", Pearson Education Limited, 2014 2. Lecture Notes and Animated PowerPoint slides is provided

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Lesson Plan: Fill out the topic for each class in detail		
Week 1	1st Day	Orientation & Opening Ceremony
	Class 1	Number System, why computer uses binary system Tool: TinkerCAD.com
	Class 2	TCP/IP Network Protocol, why do we need layers? Encapsulation? Tool: Animated Presentation
	Class 3	Physical Layer, what is happening in physical layer? Wired vs. Wireless? Tool: Cisco Packet Tracer
Week 2	Class 4	Data Link Layer, how 2 computers communicate with each other? Tool: Cisco Packet Tracer and Wireshark
	Class 5	Network Layer, how can we expand our network? IPv4 vs. IPv6? Tool: Cisco Packet Tracer and Wireshark
	Class 6	Transport Layer, how can we ensure data received by the other end? Tool: Cisco Packet Tracer and Wireshark
	Class 7	Application Layer, how can we provide services? HTTP vs. HTTPS? Tool: Cisco Packet Tracer and Wireshark
Week 3	Class 8	Mid-Exam
	Class 9	Building a small network using Virtual Machine Tool: Wireshark, Oracle VirtualBox, and your preferred OS (FreeBSD or Ubuntu Server)
	Class 10	Setting up and configure web and mail service Tool: Wireshark, Oracle VirtualBox, and your preferred OS (FreeBSD or Ubuntu Server)
	Class 11	Setting up and configure Proxy and VPN Tool: Wireshark, Oracle VirtualBox, and your preferred OS (FreeBSD or Ubuntu Server)
Week 4	Class 12	Setting up and configure Firewall and Bandwidth Management Tool: Wireshark, Oracle VirtualBox, and your preferred OS (FreeBSD or Ubuntu Server)
	Class 13	Packet Crafting using Python Scapy Tool: Python Scapy, Wireshark, Oracle VirtualBox, and your preferred OS (FreeBSD or Ubuntu Server)
	Class 14	Final Exam
	Class 15	Future Internet Architecture: Named-Data Networking

Evaluation (%)

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* Total sum of percentages should be 100%

* Only below options are available, please do not change the form (fill out the given form)

Assignments	Attendance	Final	Group Project	Mid-term	Participation	Presentation	Daily Quiz	Total
	0	30%	0	40%	0	0	30%	**100 %**