

1.	Name of Course/Module	Computer Networks
2.	Course Code	TCE2321
3.	Status of Subject	Major for B.IT Security Technology
4.	MQF Level/Stage	Bachelor Degree – MQF Level 6
5.	Version (state the date of the last Senate approval)	June 2012
6.	Requirement for Registration	TCE2311 Data Communications and Networking
7.	Name(s) of academic/teaching staff	Lew Sook Ling Fathin Fakhriah Abdul Aziz Lau Siong Hoe
8.	Semester and Year offered	Trimester 1 (Gamma Level)
9.	Objective of the course/module in the programme :	
	To learn and to know the concepts of communication networks using TCP/IP protocols and its operations. Students are also expected to configure basic network topology and its components.	
10.	Learning Outcomes :	
	At the completion of the subject, students should be able to:	
	LO1: Explain basic networking concepts including network layers, network devices and network topologies (Cognitive, Level 2).	
	LO2: Analyse the operation of the TCP/IP networks, including network protocols and routing algorithms (Cognitive, Level 4).	
	LO3: Describe various networking technologies including Local Area Networks (LANs) and Wide Area Networks (WANs) (Cognitive, Level 6).	
	LO4: Build and configure basic network topologies for LANs and WANs (Psychomotor, Level 5).	
11.	Synopsis:	
	This subject describes the concepts of computer communication networks using TCP/IP protocols. The major topics include the basic of switched networks, TCP/IP networks and its protocols.	
	Subjek ini menghuraikan konsep rangkaian komunikasi komputer menggunakan protokol TCP / IP. Topik utama termasuk asas rangkaian switch, TCP / IP rangkaian dan protokolnya.	
12.	Mapping of Subject to Programme Outcomes :	
	Programme Outcomes	<b>% of Contribution</b>
	PO1: Apply soft skills in work and career related activities	10
	PO2: Demonstrate knowledge and understanding of fundamental concepts, principles and best practices	40
	PO3: Analyse the requirements to address problems or opportunities in relevant domains or organisations	40
	PO5: Blend innovative mind and entrepreneurial skills	10
13.	Assessment Methods and Types :	

	Method and Type	Description/Details	Percentage		
	Test 1	Written Test	15%		
	Test 2	Written Test	15%		
	Lab/Tutorial	Practical Work and Written Tutorial	10%		
	Final Exam	Written Exam	60%		
14.	Details of Subject				
	Topics	Mode of Delivery			
		Lecture	Lab	Tutorial	
	<b>1. Internetworking: Data link layer</b> Physical addressing, Ethernet technology, Local Internetworking. Spanning Tree protocol (STP). STP Bridging. Virtual LAN, Layer 2 Switching.	4	4	2	
	<b>2. Internetworking: Network layer</b> Logical Addressing: IPv4 and IPv6 addresses. Internet Structure. IP protocol, IP Addressing scheme and subnetting, IPv4 Datagram format, fragmentation. Transition from IPv4 to IPv6.	6	4	3	
	<b>3. Internet and TCP/IP: Network Layer issues</b> Address mapping using ARP, Internet Control Management Protocols (ICMP). Unicast Routing Protocols. Multicast Routing Protocols.	6	2	3	
	<b>4. Internet and TCP/IP: Transport Layer</b> Process-to-process delivery. Connectionless vs connection-oriented services. Transport protocols: UDP and TCP segment format and services.	4		2	
	<b>5. Internet and TCP/IP: Applications</b> Domain Name System. Electronic Mail. World Wide Web. Multimedia Over Internet.	2		2	
	<b>6. WAN technologies</b> WAN Infrastructure, WAN Services: X.25, SONET, ISDN, Frame Relay.	2		2	
	<b>7. Network Management, Security</b> Network Management (SNMP), Network Security: Cryptography, Symmetric-Key Algorithm, Public Key Algorithm, Digital Signature, IPSec, FireWalls. Network Performance issues.	4		2	
	<b>Total</b>	<b>28</b>	<b>10</b>	<b>16</b>	
15.	Laboratory				
	<ul style="list-style-type: none"> <li>• Configure basic commands on PCs and network devices.</li> <li>• IP addressing scheme and subnetting.</li> <li>• Mapping logical to physical address using ARP.</li> <li>• General IOS Commands.</li> <li>• General routing techniques and commands.</li> <li>• Building VLANs.</li> </ul>				
16.	Total Student Learning Time (SLT)	Face to Face (Hour)	Total Guided and Independent Learning		
	Lecture	28	28		
	Tutorials	16	16		
	Laboratory/Practical	10	5		

	Presentation		
	Assignment		
	Mid Term Test	2	8
	Final Exam	2	15
	Quizzes		
	Sub Total	58	72
	Total SLT	130/40 = 3.25 => 3	
17.	Credit Value	3	
18.	Reading Materials :		
	Textbook	Reference Materials	
	1. Behrouz Forouzan, Data Communications and Networking, 4 <sup>th</sup> Edition. McGraw-Hill. 2007.	2. Computer Networks, 4 <sup>th</sup> ed.; Tanenbaum, Andrew S.; New Jersey, Prentice Hall, 2003. ISBN: 0-13-038488-7. 3. Computer Networking, A top-down approach featuring internet; James F Kurose; 4 <sup>th</sup> Edition; Prentice Hall, 2008; ISBN 0-321-26976-4. 4. Computer Networks and Internets; 4 <sup>th</sup> . Edition; Douglas E. Comer; Prentice Hall 2008 ISBN 0-13-123627-X.	
19.	Appendix (to be compiled when submitting the complete syllabus for the programme) :		
	<ol style="list-style-type: none"> <li>1. Mission and Vision of the University and Faculty</li> <li>2. Mapping of Programme Objectives to Vision and Mission of Faculty and University</li> <li>3. Mapping of Programme Outcome to Programme Objectives</li> <li>4. Programme Objective and Outcomes (Measurement and Descriptions)</li> </ol>		