1.	Name of Course/Module	Computer Networks
2.	Course Code	TCE2321
3.	Status of Subject	Major for B.IT Information Technology Management
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	**% of Contribution**
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		15%
	Test 2		15%
	Lab/Tutorial		10%
	Final Exam		60%

14. Details of Subject

Topics	Mode of Delivery		
	Lecture	Lab	Tutorial
1. Internetworking: Data link layer Physical addressing, Ethernet technology, Local Internetworking. Spanning Tree protocol (STP). STP Bridging. Virtual LAN, Layer 2 Switching.	4	4	2
2. Internetworking: Network layer 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
3. Internet and TCP/IP: Network Layer issues Address mapping using ARP, Internet Control Management Protocols (ICMP). Unicast Routing Protocols. Multicast Routing Protocols.	6	2	3
4. Internet and TCP/IP: Transport Layer Process-to-process delivery. Connectionless vs connection-oriented services. Transport protocols: UDP and TCP segment format and services.	4		2
5. Internet and TCP/IP: Applications Domain Name System. Electronic Mail. World Wide Web. Multimedia Over Internet.	2		2
6. WAN technologies WAN Infrastructure, WAN Services: X.25, SONET, ISDN, Frame Relay.	2		2
7. Network Management, Security Network Management (SNMP), Network Security: Cryptography, Symmetric-Key Algorithm, Public Key Algorithm, Digital Signature, IPSec, FireWalls. Network Performance issues.	4		2
Total	**28**	**10**	**16**

15. Laboratory

- Configure basic commands on PCs and network devices.
- IP addressing scheme and subnetting.
- Mapping logical to physical address using ARP.
- General IOS Commands.
- General routing techniques and commands.
- Building VLANs.

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, 4th Edition. McGraw-Hill. 2007.	2. Computer Networks, 4th 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; 4th Edition; Prentice Hall, 2008; ISBN 0-321-26976-4. 4. Computer Networks and Internets; 4th. Edition; Dougles E. Comer; Prentice Hall 2008 ISBN 0-13-123627-X.	
19.	Appendix (to be compiled when submitting the complete syllabus for the programme) : 1. Mission and Vision of the University and Faculty 2. Mapping of Programme Objectives to Vision and Mission of Faculty and University 3. Mapping of Programme Outcome to Programme Objectives 4. Programme Objective and Outcomes (Measurement and Descriptions)		