Teaching Plan

FAKULTI TEKNOLOGI MAKLUMAT DAN KOMUNIKASI
UNIVERSITI TEKNIKAL MALAYSIA MELAKA

DATA COMMUNICATION AND NETWORKING		
DIT 2313	**SEMESTER I**	**SESSION 2021/2022**

DITS 2313 DATA COMMUNICATION AND NETWORKING [3, 2, 2]
TYPE OF COURSE: P
EDITION: 2
UPDATED: 12-08-2019

1.0 LEARNING OUTCOMES

Upon completion this course, students will be able to perform tasks related to the following:

i. Apply the knowledge of data communication fundamental and networking concepts (C3)
ii. Differentiate types of media, network topology and network technologies (A3)
iii. Follow the best practices or techniques to configuring current network and telecommunication technology (P3)

2.0 SYNOPSIS

This course introduces the fundamental concepts and terminologies of data communication and networking, encompassing both technical and managerial aspects and to help students better understand the challenges and opportunities faced by modern business. Topics will include: fundamentals of telecommunications, data transmission mechanisms, telecommunication media and technologies, considerations for LAN and WAN implementations, the Internet and intranet applications, emerging telecommunications technologies, and trends in the telecommunications industry. Students will also be able to understand, explain and apply the fundamentals of data communication and network technology concepts and skills in network applications, troubleshooting, and configuring basic computer networks using guided or unguided media.

3.0 REFERENCES

[1] Ibe, O.C., 2018. Fundamentals of Data Communication Networks, Wiley
[2] Pooch, U.W., 2018. Telecommunications and Networking: 0. CRC Press.
[3] Curt M. White, 2015. Data Communications and Computer Networks, 8th ed. Cengage Learning
[4] White, C.M., 2015. Data Communications and Computer Networks: A Business User's Approach, Eight Edition, Cengage Learning
[5] Jerry FitzGerald, Alan Dennis, Alexandra Durcikova, 2014, Business Data Communications and Networking, 12th Edition, John Wiley & Sons
[6] Zurina Saaya, Marliza Ramly, Nazrulazhar Bahaman, Muhammad Syahrul Azhar Sani, Norharyati Harum, Haniza Nahar and Othman Mohd, 2014. Lab Companion: Data Communication and Networking, 1st Edition.
[7] Randall J. Boyle, Jeffrey A. Clements, 2014. Applied Networking Labs, 2nd Edition, Prentice Hall
[8] Bahaman, Nazrulazhar, Hamid, Erman and Mat Ariff, Azman, 2013. Data Communications and Networking: Practical Approach, 3rd Edition, Venton.
[9] Forouzan, Behrouz A., 2013. *Data Communications and Networking*, 5th Edition, McGraw-Hill.

4.0 COURSE IMPLEMENTATION

i. Lecture
   - 2 hours per week for 14 weeks (Total = 28 hours)

ii. Laboratory Activities
   - 2 hours per week for 14 weeks (Total = 28 hours)

5 COURSE EVALUATION

Assessment Method	LO 1	LO 2	LO 3
Quiz (1) = 10% (Ulearn- MCQ)	10%		
Lab Assessment (3) = 15%		15%	
Lab Test (1) = 15% (Ulearn- MCQ)			15%
Mid Term (1) = 20%	20%		
Final Examination = 30 %	30%		
Group Project (1) = 10%		10%	
Total	60%	25%	15%

6.0 STUDENT LEARNING TIME

		Guided Learning Time				Independant Learning								Assessment Time				
Week	**CLO**	**L**	**T**	**P**	**O**	**L**	**T**	**P**	**O**	**F**	**T**	**A**	**O**	**F**	**T**	**A**	**O**	**SLT**
W1	1	2		2		1	0	1		0	0	0	0					6
W2	1	2		2		1	0	1		0	0	0	0					6
W3	1	2		2		1	0	1		0	0	0	0					6
W4	1	2		2		1	0	1		0	0	0	0					6
W5	2	2		2		1	0	1		0	0	0	1.6				0.4	8
W6	2	2		2		1	0	1		0	0	0	0.8				0.2	7
W7	2	2		2		1	0	1		0	4	0	0.8		1		0.2	12
W8	2	2		2		1	0	1		0	4	0	0.8		1		0.2	12
W9	2	2		2		1	0	1		0	0	0	0.8				0.2	7
W10	3	2		2		1	0	1		0	0	0	0.8				0.2	7
W11	3	2		2		1	0	1		0	0	0	0.8				0.2	7
W12	3	2		2		1	0	1		0	0	0	0.8				0.2	7
W13	3	2		2		1	0	1		0	0	0	0.8				0.2	7
W14	3	2		2		1	0	1		0	4	0	0.8		1		0.2	12
>W14										0	4	4	0		1	1		10
Overall		28	0	28	0	14	0	14	0	0	16	4	8.8	0	4	1	2.2	120
															SLT Credit Equivalent			3

7.0 DETAILED SYLLABUS AND TEACHING PLAN

Week	Session	Contents	References	Assessments
1	Lecture 1	**INTRODUCTION TO DATA COMMUNICATION** • Introduction • Components • Types of data • Effectiveness • Data transmission flow • Mode of data transmission • Protocol and Standard	[Chapter 1, Forouzan]	
	Lab 1	Mathematics in Computer Networking	[Ch 1, Lab Companion]	
2	Lecture 2	**NETWORK MODELS** • Introduction • OSI Network Model • TCP/IP Model • Addressing		
	Lab 2	Network Models	[Ch 2, Lab Companion]	
3	Lecture 3	**NETWORK CONCEPTS AND COMPONENTS** • Introduction • Criteria for effective networking • Basic Network Topologies • Categories of networks • Types of network connection • Internet and Extranet • Repeater and Hub • Bridge • Switches • Router	[Chapter 1&15, Forouzan]	
	Lab 3	Cables Construction	[Ch 3, Lab Companion]	

4	Lecture 4 Lab 4	**NETWORK MEDIA** • Introduction • Conducted Media • Fiber Optic • Wireless • Connector • Transceiver and Media Converter Lab Assessment: Cable Construction	[Chapter 7, Forouzan] [Ch 3, Lab Companion]	**Lab Assessment**
5	Lecture 5 Lab 5	**IPV4 ADDRESSING** • Introduction • Address classes • Notation • Classful Addressing IPV4 Adressing	[Chapter 19&20, Forouzan] [Ch 4, Lab Companion]	**Quiz 1**
6	Lecture 6 Lab 6	**IPV4 ADDRESSING** • Classless Addressing IPv4 Subnetting	[Chapter 19&20, Forouzan] [Ch 5, Lab Companion]	
7	Lecture 7 Lab 7	**WIRED LAN: ETHERNET** • IEEE standard • Standard Ethernet • Changes in the standard • Fast Ethernet • Gigabit Ethernet Wired LAN	[Chapter 13, Forouzan] [Ch 7, Lab Companion]	**Mid-Term Exam**
28/12		MIDTERM BREAK		

8	Lecture 8 Lab 8	**WIRELESS LAN** • Introduction • WLAN (IEE802.11) • Benefits of WLAN • Disadvantages of WLAN • WLAN Architecture • Distribution system • Types of wireless LANs • Bluetooth (IEE802.15) • Benefits of Bluetooth • Disadvantages of Bluetooth • Bluetooth Architecture • Types of wireless LANs Lab Test: Wired LAN	[Chapter 14, Forouzan] [Ch 3 & 7, Lab Companion]	**Lab Test 1**
9	Lecture 9 Lab 9	**IPV6 ADDREESSING** • Introduction • Features • Addressing • IPv6 packet • Transition mechanisms Basic IPv6	[Chapter 19&20, Forouzan] [Ch 10, Lab Companion]	
10	Lecture 10 Lab 10	**SIGNALS** • Introduction • Analog Signal • Digital Signal • Transmission Impairment Performance Data Flow in Data Communication	[Chapter 3, Forouzan] [Ch 11, Lab Companion]	
11	Lecture 11 Lab 11	**DIGITAL TRANSMISSION** • Introduction • Digital to Digital Conversion • Analog to Digital Conversion Tutorial	[Chapter 4, Forouzan]	

12	Lecture 12 Lab 12	**ANALOG TRANSMISSION** • Introduction • Analog to Analog Conversion • Digital to Analog Conversion Tutorial	[Chapter 5, Forouzan] [Ch 8 & 9, Lab Companion]	
13	Lecture 13 Lab 13	**MULTIPLEXING** • Introduction • Frequency Division Multiplexing • Synchronous Time Division Multiplexing • Statistical Time Division Multiplexing Wireless network	[Chapter 6, Forouzan] [Ch 8 & 9, Lab Companion]	
14	Lecture 14 Lab 14	**DATA FLOW CONTROL** • Introduction • Error And Flow Control • Stop-N-Wait Arq • Go-Back-N Arq • Selective Repeat Arq **DATA FLOW CONTROL**	[Chapter 7, Forouzan] [Ch 8 & 9, Lab Companion]	

SUBJECT vs PROGRAM OUTCOME (PO)

Subject	PROGRAM OUTCOME (PO)								
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
DITS 2313	X		X		X				

LEARNING OUTCOME (LO)

LO1	Apply the knowledge of data communication fundamental and networking concepts (C3)
LO2	Differentiate types of media, network topology and network technologies (A3, CTPS1)
LO3	Follow the best practices or techniques to configuring current network and telecommunication technology (P3)

LEARNING OUTCOME (LO) vs PROGRAM OUTCOME (PO)

LO	PROGRAM OUTCOME (PO)								
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
LO1	X								
LO2					X				
LO3			X						

SUBJECT vs SOFT SKILLS

Subject	SOFT SKILLS																							
	communication skill					critical thinking & problem solving					team work			lifelong learning			entrepreneurship skills			ethics&moral professionalism			leadership skills		
	CS 1	CS 2	CS 3	CS 4	CS 5	CTPS 1	CTPS 2	CTPS 3	CTPS 4	CTPS 5	TS 1	TS 2	TS3	LL 1	LL 2	LL 3	ES 1	ES 2	ES 3	EM1	EM2	EM3	LS 1	LS 2	LS 3
DITS 1133						X																		

LEARNING OUTCOME (LO) vs SOFT SKILLS

LO	SOFT SKILLS																							
	communication skill					critical thinking & problem solving					team work			lifelong learning			entrepreneurship skills			ethics & moral professionalism			leadership skills		
	CS 1	CS 2	CS 3	CS 4	CS 5	CTPS 1	CTPS 2	CTPS 3	CTPS 4	CTPS 5	TS 1	TS 2	TS3	LL 1	LL 2	LL 3	ES 1	ES 2	ES 3	EM1	EM2	EM3	LS 1	LS 2	LS 3
LO1																								
LO2						X																		
LO3																								

SUBJECT vs TAXONOMY

Subject	Taxonomy																
	Affective					Cognitive						Psychomotor					
	A1	A2	A3	A4	A5	C1	C2	C3	C4	C5	C6	P1	P2	P3	P4	P5	P6	P7
DITS 1133	X	X	X			X	X	X				X	X	X				

LEARNING OUTCOME (LO) vs TAXONOMY

LO	Taxonomy																
	Affective					Cognitive						Psychomotor					
	A1	A2	A3	A4	A5	C1	C2	C3	C4	C5	C6	P1	P2	P3	P4	P5	P6	P7
LO1						X	X	X										
LO2	X	X	X															
LO3												X	X	X				

PENGESAHAN PERANCANGAN MENGAJAR

Disediakan oleh ;

…….
Nama : Ariff Bin Idris
Jawatan :
Cop :

Tarikh : 11 Oct 2020

Disahkan oleh ;

…….
Dekan/Timbalan Dekan(Akademik)/
Ketua Jabatan
Cop :

Tarikh : _____

PEMANTAUAN PELAKSANAAN PERANCANGAN MENGAJAR (CUTI PERTENGAHAN SEMESTER)

Ulasan/Komen :

Disemak oleh ;

…….
Dekan/Timbalan Dekan(Akademik)/Ketua Jabatan
Cop : Tarikh: _____

PEMANTAUAN PELAKSANAAN PERANCANGAN MENGAJAR (MINGGU KE-16 SEMESTER)

Ulasan/Komen :

Disemak oleh ;

…….
Dekan/Timbalan Dekan(Akademik)/Ketua Jabatan
Cop : Tarikh: _____