

OPERATING SYSTEM		
DITS 2213	SEMESTER 2	SESI 2020/2021

DITS 2213 OPERATING SYSTEM [3, 2, 2]

TYPE OF SUBJECT: C
EDITION: 1
UPDATED DATE: 15-03-2021

1.0 LEARNING OUTCOMES

By the end of this subject, the student should be able to:

1. Describe the major components and functionalities of operating system and the underlying structure. (C2)
2. Explain different types of operating system algorithms such as I/O scheduling, memory scheduling and uniprocessor scheduling. (P2)
3. Demonstrate basic system administration task in different operating system. (CTPS2,CS3)

2.0 SYNOPSIS

This course is designed to give an exposure to students about the fundamental of operating system including process, management of memory, file and I/O and also about CPU scheduling. The introduction part consists of the evolution of operating system since it started until now. Student will also learn about the basic concepts, technology and theory used in operating system such as concurrency, kernel, deadlock and multithreading. In addition, students will be introduced to few types of operating systems at basic administrative level.

3.0 PRE-REQUISITE

DITS1133 – Computer Organization and Architecture

4.0 LAB AND PRACTICAL

Lab practices on installation, usage and familiar with commands for two different operating systems that are currently use in the computer industries. The two operating systems are Microsoft Windows with some introduction on MS-DOS and Linux.

5.0 REFERENCES

- [1] Stallings, W. and Moumita M.M. (2017), Operating Systems: Internals and Design Principles 9th Ed., Pearson.
- [2] Anderson, T. and Dahlin, M. (2014), Operating Systems: Principles and Practice 2nd Edition, Recursive Books.
- [3] Tanenbaum, A.S. (2016). Modern Operating Systems. 4th Ed., Ed. Pearson.

- [4] McHoes, A. and Flynn, I. M (2017). Understanding Operating System, 7th Ed. Cengage Learning.
- [5] Silberschatz, A., Galvin, P.B. and Gagne, G. (2014). Operating System Concept 8th.Ed., John Wiley and Sons, Inc.
- [6] Jason W., Eckert, M. and John Schitka. Linux Guide to Certification.
- [7] Md. Shah, W. and Anawar, S. (2019). Debian 9 Stretch: Basic Administration, Penerbit UTeM.

6.0 IMPLEMENTATION METHOD

- a. Lecture: 2 hrs per week for 14 weeks (Total = 28 hrs)
- b. Lab: 2 hrs per week for 14 weeks (Total = 28 hrs)

7.0 COURSE EVALUATION

Assessment Method	LO 1	LO 2	LO 3	Scheme, Rubric/ guideline
Lab Assessment			15%	
Lab Test			20%	
Assignment (2)		20%		
Mid Term	15%			
Final	15%	15%		
Total	30%	35%	35%	

8.0 STUDENT LEARNING TIME

Minggu Week	CLO	Guided Learning Time (hr)				Independent Learning (hr)								Assessment Time (hr)				SLT
		L	T	P	O	L	T	P	O	F	T	A	O	F	T	A	O	
W1	1	2	0	2	0	2	0	2	0	0	0	0	0	0	0	0	0	8
W2	1	2	0	2	0	2	0	2	0	0	0	0	0	0	0	0	0	8
W3	1	2	0	2	0	2	0	2	0	0	0	0	0	0	0	0	0	8
W4	1	2	0	2	0	2	0	2	0	0	0	0	0	0	0	0	0	8
W5	1	2	0	2	0	1	0	1	0	0	0	0.8	0	0	0	0.2	0	7
W6	2	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	0	6
W7	2	2	0	2	0	2	0	2	0	0	0	0	0	0	0	0	0	8
W8	2	2	0	2	0	2	0	2	0	0	0	0	0	0	0	0	0	8
W9	2	2	0	2	0	1	0	1	0	0	4	0	0	0	1.0	0	0	11
W10	2	2	0	2	0	1	0	1	0	0	0	0.8	0	0	0	0.2	0	7
W11	3	2	0	2	0	2	0	2	0	0	0	0	0	0	0	0	0	8
W12	3	2	0	2	0	2	0	2	0	0	0	0	0	0	0	0	0	8
W13	3	2	0	2	0	2	0	2	0	0	2	0	0	0	0.5	0	0	10.5
W14	3	2	0	2	0	2	0	2	0	0	0	0	0	0	0	0	0	8
W15	0	0	0	0	0	0	0	0	0	8	0	0	0	2	0	0	0	10
Keseluruhan Overall		28	0	28	0	24	0	24	0	8	6	1.6	0	2	1.5	0.4	0	123.5
SLT Credit Equivalent																		3.09

9.0 DETAILED SYLLABUS AND TEACHING PLAN

Week	Session	Contents	References	Delivery Method
1	Lecture 1	Operating System Overview 1.1 Operating Systems Objectives and Functions 1.2 The Evolution of Operating Systems 1.3 Major Achievements 1.4 Characteristics of Modern Operating Systems 1.5 SMP and Microkernels Overview.	[1]	Lecture
	Lab 1	MS-DOS Commands.		
2	Lecture 2	Process Description and Control 2.1 Process States 2.2 Process Image 2.3 Process Description.	[1]	Lecture
	Lab 2	MS-DOS Commands.(continued)		
3	Lecture 3	Threads 3.1 Process and Threads 3.2 Benefits of Threads 3.3 User Level Threads and Kernel Level Threads (ULT and KLT).	[1]	Lecture
	Lab 3	Exploring different types of operating systems (desktop/mobile)		
4	Lecture 4	Concurrency (Mutual Exclusion and Synchronization) 4.1 Principles of Concurrency 4.2 Mutual Exclusion: Software Approaches, Semaphores, Monitors, Message Passing.	[1, 7]	Lecture
	Lab 4	Installation operating system		
5	Lecture 5	Concurrency (Deadlock and Starvation) 5.1 Principles of Deadlock 5.2 Deadlock Prevention 5.3 Deadlock Avoidance 5.4 Deadlock Detection 5.5 An Integrated Deadlock Strategy.	[1, 7]	Lecture Assignment 1
	Lab 5	Exploring operating system		
6	Lecture 6	Memory Management 6.1 Fixed Partitioning 6.2 Dynamic Partitioning 6.3 Simple Paging 6.4 Simple Segmentation.	[1, 7]	Lecture
	Lab 6	Files and files system		
7	Lecture 7	Virtual Memory 7.1 Paging, Translation 7.2 Lookaside Buffer 7.3 Segmentation 7.4 Fetch 7.5 Policy	[1]	Lecture
	Lab 7	Using Basic Commands		

8	Lecture 8 Lab 8	Uniprocessor Scheduling 8.1 Types of Processor Scheduling 8.2 Scheduling Algorithm. Managing Users, Groups and File Permission	[1, 7]	Lecture
9		MIDTERM BREAK		
10	Lecture 9 Lab 9	Multiprocessor and Real-Time Scheduling 9.1 Classifications of Multiprocessor Scheduling 9.2 Process and Thread Scheduling 9.3 Multiprocessor Thread Scheduling. Managing Files	[1, 7]	Lecture Mid Term Test
11	Lecture 10 Lab 10	Multiprocessor and Real-Time Scheduling (continued) 10.1 Real Time Systems 10.2 Characteristic of Real Time OS 10.3 Real-Time Scheduling Package Management	[1, 7]	Lecture Assignment 2
12	Lecture 11 Lab 11	Input Output Management and Disk Scheduling 11.1 I/O Devices 11.2 Organization of the I/O Function 11.3 Operating System Design Issues 11.4 I/O Buffering 11.5 Disk Scheduling. Editor and Compiler	[1, 7]	Lecture
13	Lecture 12 Lab 12	Input Output Management and Disk Scheduling (continued) 11.1 I/O Devices 11.2 Organization of the I/O Function 11.3 Operating System Design Issues 11.4 I/O Buffering 11.5 Disk Scheduling. Managing Process and Job		Lecture
14	Lecture 13 Lab 13	Input Output Management and Disk Scheduling (continued) 11.1 I/O Devices 11.2 Organization of the I/O Function 11.3 Operating System Design Issues 11.4 I/O Buffering 11.5 Disk Scheduling. Task Scheduling	[1]	Lecture Lab Test
15	Lecture 14 Lab 14	File Management 12.1 Overview 12.2 File Organization and Access 12.3 File Directories 12.4 File Sharing. Basic Networking in Debian	[1]	Lecture

10.0 MATRIX OF LEARNING OUTCOMES

SUBJECT vs PROGRAM OUTCOME (PO)

Subject	PROGRAM OUTCOME (PO)							
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
DITS 2213	X		X		X			

LEARNING OUTCOME (LO) vs PROGRAM OUTCOME (PO)

LO	PROGRAM OUTCOME (PO)							
LO1	X							
LO2			X					
LO3					X			

LEARNING OUTCOME (LO)

LO1	Describe the major components and functionalities of operating system and the underlying structure. (C2)
LO2	Justify different types of operating system algorithms such as I/O scheduling, memory scheduling and uniprocessor scheduling. (P2)
LO3	Demonstrate basic system administration task in different operating system. (CTPS2, CS3)

SUBJECT vs SOFT SKILLS

SOFT SKILLS																										
Subject	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	TS 3	LL 1	LL 2	LL 3	ES 1	ES 2	ES 3	EM 1	EM 2	EM 3	LS1	LS2	LS3	
DITS 2213			X				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	CTP S1	CTPS 2	CTPS 3	CTPS 4	CTPS 5	TS1	TS 2	TS 3	LL 1	LL 2	LL 3	ES 1	ES 2	ES 3	EM 1	EM 2	EM 3	LS1	LS 2	LS 3
LO1																									
LO2							X																		
LO3			X																						

SUBJECT vs TAXONOMY

	Taxonomy																	
	Affective					Cognitive						Psychomotor						
	A1	A2	A3	A4	A5	C1	C2	C3	C4	C5	C6	P1	P2	P3	P4	P5	P6	P7
DITS 2213							X						X					

LEARNING OUTCOME (LO) vs TAXONOMY

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											
LO2													X					
LO3																		

TEACHING PLAN APPROVAL

Prepared by;

Approved by;

.....
Name : IRDA BINTI ROSLAN

.....
Dean/Deputy Dean(Academic)/
HOD

Stamp :

Stamp :

Date : 15 MAC 2021

Date : _____

TEACHING PLAN IMPLEMENTATION (MID SEMESTER BREAK)

Comment :

Checked by ;

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Dean/Deputy Dean (Academic)/HOD
Stamp :

Date: _____

TEACHING PLAN IMPLEMENTATION (WEEK 16)

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Dean/Deputy Dean (Academic)/HOD
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