

COMP 304 Course Outline

January 2012

Subject Title:	<i>Operating Systems</i>	
Subject Code:	COMP 304	
Hours Assigned:	Lecture	35 hours
	Tutorial / Laboratory	21 hours
Pre-requisites:	<i>Principles of Programming</i>	COMP 201
Credits:	3	

Objectives

This subject provides students knowledge on:

- resource management provided by operating systems;
- concepts and theories of operating systems;
- implementation issues of operating systems.

Subject Learning Outcomes

After taking this subject, the students should be able to:

Professional/academic knowledge and skills

- (1) identify the services provided by operating systems;
- (2) understand the internal structure of an operating system and be able to write programs using system calls;
- (3) understand and solve problems involving process control, mutual exclusion, deadlock and synchronization.

Attributes for all-roundedness

- (4) develop skills in problem solving using systematic approaches;
- (5) solve complex problems in groups and develop group work.

Alignment of Programme Outcomes:

Programme Outcome 1: This subject contributes to having students practice their writing skills with project document and report writing.

Programme Outcome 4: This subject contributes to developing student critical thinking through tutorial and lab exercises on solving problems. They will also practice more in written assignments, programming exercises, and project.

Programme Outcome 5: This subject contributes to problem solving with programming skills through lab exercise and project with proper design and implementation.

Programme Outcome 7: This subject contributes to team work with group-based project for students to practice team spirit.

Keyword Syllabus

Introduction to operating systems; process management; memory and secondary storage management; protection and security; case studies on operating systems.

Method of Assessment for Learning Outcomes

Assessment method / task	% weighting	Intended subject learning outcomes to be assessed				
		1	2	3	4	5
Assignments/lab exercises	18		x	x	x	
Mid-term	18	x	x	x	x	
Project	18	x	x	x	x	x
Class/BB Participation	$p \in [0..5]$					
Examination	45	x	x	x	x	
Total	99 to 104					

Criteria for Assessment

The university had already adopted the concept of **criteria referencing assessment (CRA)**. Students will be graded based on the level of attainment to the learning outcomes. There are three levels of knowledge acquisition: *recall*, *connect* and *create*. In general, students who are able to *remember* and to write down the correct knowledge that they have learned to an acceptable degree would normally receive a grade of C or C+. Students who could *deduce* the relationship between the materials covered in different lectures and *apply* them to solve problems in a *reasonable* way would receive a grade of B or B+. Students who could *master* the knowledge they have learned and *apply* it to solve various related problems *systematically* with a *good result* could receive a grade of A or A+. Students who could not even recall what they have learned could receive a failure grade. However, the actual grade depends on a combination of performance demonstrated in continuous assessment and in examination.

Tentative Teaching Schedule

Week	Lecture Topic	Chapter	Date		T / L
			Thu	Fri	
1	Introduction to operating systems	1 and 2	5/1	6/1	-
2	Interrupt and system calls Unix and Linux: basic operation	1 and 2 Notes	12/1	13/1	Lab
3	Process structure and management	3	19/1	20/1	Lab
-	Chinese New Year	-	-	-	-
4	Unix and Linux: process and shell	Notes	2/2	3/2	Lab
5	Interprocess communication and deadlock	3 and 6 Notes	9/2	10/2	Lab
6	CPU scheduling	5	16/2	17/2	Lab
7	Memory management	7	23/2	24/2	Lab
8	Virtual memory	8	1/3	2/3	Lab
9	Process synchronization	6	8/3	9/3	Tut
10	<i>Mid-term</i>		TBA		Tut
11	Process synchronization	6	22/3	23/3	Tut
12	File system and secondary storage	9, 10 and 11	29/3	30/3	Tut
13	Easter Holiday: Protection and security	13 and 14	5/4	-	Wed, Fri groups join others
13	Makeup Class: Protection and security	13 and 14	-	TBA	Tut
14	Case studies / revision	15 and 16	12/4	13/4	Mon groups join others

Important Dates

Mid-term: March 12 to March 17, 2012 (Week 10)
Final: April 18 to April 27, 2012 (to be arranged by Academic Secretary)
Project: April 2, 2012 (Week 13)

Indicative Reading List

Text:

Silberschatz, A., Galvin, P.B. and Gagne, G., *Operating System Concepts Essentials*, 8/E, John Wiley and Sons, 2011.

References:

Elmasri, E., Carrick, A.G. and Levine, D., *Operating Systems: A Spiral Approach*, McGraw Hill, 2010.

McHoes, A.M. and Flynn, I.M., *Understanding Operating Systems*, 6/E, Thomson, 2011.

Dhamdhere, D.M., *Operating Systems: A Concept-based Approach*, 2/E, McGraw Hill, 2006.

Diaz, C., *Introduction to Unix/Linux*, Thomson, 2007.