INTI International University & Colleges™

COURSE STRUCTURE

Name of Course: OPERATING SYSTEMS

Course Code: DCS1106

Credit Hours: 4

Prerequisite/co-requisite: None

Summary:

The course aims to explore the importance of the operating system and its function. The different techniques used by the operating system to achieve its goals as resource manager. This would mean aspects of OS in managing memory, process management and security. The course also explores how application interacts with the operating system and how the operating systems interact with the machine.

Course Learning Outcomes:
Upon completing this course, the students will be able to:
CLO1: Describe the fundamental concepts, structure and design of operating systems. (C2, PLO1)
CLO2: Able to display the ability to explain the policies for scheduling, deadlocks, memory management, and file systems of modern operating systems. (P3, PLO3)
CLO3: Differentiate various operating systems design and architecture by analysing its impact on performance and security. (C3, PLO2)

Course Format:

Total Student Learning Time (SLT) (L = Lecture; T = Tutorial; P = Practical; EL = E-Learning) :					
Learning Hours				**Independent Learning (hr)**	**Total Student Learning Time (hr)**
L	T	P	EL		
28	0	14	14	104	160

Teaching and Delivery Methods/ Teaching Methodology:

Lectures, Tutorial and Practical/Laboratory work delivered in a combination of blended & independent learning

E-Learning provided by INTI makes learning more accessible and convenient for the students. The blended model utilized by INTI is the integration of E-learning via INTI's Learning Management System and the conventional lecturer-led classroom activities. INTI students are required to access to the online learning materials (additional notes, reading materials, online assessments, discussion forums and etc.), so as to acquire a complete learning process. This also promotes self-directed learning in encouraging INTI students to be independent learners.

Syllabus:

	Course Content Outline	CLO*
1-2	**Introduction to Computer Technology and Operating Systems**: Device, Device controller, Interrupt, Device and CPU interaction, Bootstrap program	1
3-4	**Operating Systems Structure:** Operating Systems Services, User and Operating Systems Interface, System Calls, Systems Programs, Introduction to Operating Systems Design	1
5-8	**File Management Systems:** File system structure, Implementation, Partition and mounting, Allocation methods	1, 2
9-12	**Memory Management : Virtual Memory** Background, Basic Hardware for managing Memory, Address binding, Contiguous allocation (based on fixed and variable partitions),Non -contiguous allocation	1, 2
13-16	**Process Control Management :** Process concept, PCB, Process state, Process scheduling (long, medium and short term schedulers),Process operations, Intercrosses communication	1,2, 3
17-20	**CPU, Memory and System Performance:** Dual Modes operation, Timer, Process management, Storage management	1,2, 3
21-24	**I/O structure:** Polling, interrupt, and DMA, How to resolve interrupt through interrupt vector, Computer System Architecture ; Single Processor System; Multiple Processors System	1,2, 3
25-28	**Security :** Goals of Protection, Principles of Protection, Domain of Protection, Access Matrix, Access Control	1,2, 3
	FINAL EXAMINATION	

Student Evaluation:

Continuous Assessment		Percentage (%)	CLO
1	Test	20	1
2	Lab Report	20	2
3	Assignment	20	3
Total		**60%**	
Final Assessment		**Percentage (%)**	
Final Examination		40	1,3

Final exam format:
Duration: 2 hours

Students are required to answer FOUR Structured questions. All questions carry equal marks.

Grading Scale:
A+ (90-100), A (80-89), A- (75-79), B+ (70-74), B (65-69), B- (60-64), C+ (55-59), C (50-54), C- (45-49), D (40-44), F (0-39), Resit Pass, RP (50-100), Resit Fail, RF (0-49)

IMPORTANT NOTE:
Students are required to "**PASS**" BOTH continuous and final assessment in order to pass the subject.

Additional Information: Virtual Box and Linux Operating Systems

Main Reference(s) Supporting Course:

1. Abraham Silberschatz, Peter B. Galvin, (2019) Operating Systems Concepts 10th Edition. Wiley

Additional References:
1. R. Karamagi (2019), Operating Systems Ebooks.com
   https://www.ebooks.com/en-my/book/209799360/operating-systems/karamagi-robert/?src=feed&gclid=Cj0KCQjw9ZzzBRCKARIsANwXael--dUw0T20xy2xZkxUZ2-D0zRsrJzrZ1udlL1rQnRnqDby-2vhCVQaAoTZEALw_wcB
2. Remzi H., Andrea C. (2018): Operating Systems: Three Easy Pieces. 1st Edition. Create Space Independent Publishing Platform

LABORATORY WORK:

Lab	Practical Work
1	Linux Commands
2	Linux Commands
3	Linux Advanced Commands
4	Pipes
5	Shell Scripting
6	Fork
7	Fork