INTI INTERNATIONAL UNIVERSITY
COURSE STRUCTURE

PROGRAMME: DIPLOMA IN INFORMATION AND COMMUNICATIONS TECHNOLOGY

1.	**NAME OF COURSE/MODULE : FUNDAMENTALS OF OPERATING SYSTEM**							
2.	**COURSE CODE: ICT2110**							
3.	**RATIONALE FOR THE INCLUSION OF THE COURSE/MODULE IN THE PROGRAMME :** Students need to be exposed to advances and development in operating systems and develop the skills to manage them.							
4.	**Student Learning Time (SLT)**	**Total Face to Face**					**Total Student Independent Learning Time**	
		L	**T**	**P**	**O**	**A**	**OL**	**IL**
	L = Lecture T = Tutorial P = Practical O= Others A= Assessment OL= Online Learning IL= Independent Learning	28		28		4	14	86
5.	**CREDIT VALUE**: 4							
6.	**PREREQUISITE (if any):** None							
7.	**LEARNING OUTCOMES:** On completion of the course, students will be able to: 1. Describe the fundamental principles of operating system and it structures. 2. Discuss the Operating System process and concurrency concepts in relation to process management, process scheduling, deadlock and memory management. 3. Explain security and protection mechanism used in Operating System. 4. Employ commands used in LINUX in particular file systems, managing users and group permissions to ensure a basic file system security.							
8.	**SYNOPSIS:** This course aims to introduce operating system concepts, design and implementation. In the lab, the students are introduced to the basic LINUX commands.							
9.	**MODE OF DELIVERY:** Lectures, Practical and Tutorials. Lecturers, Practical and Tutorials are conducted both face to face and online.							
10.	**ASSESSMENT METHODS AND TYPES:**							

Method	**Types**	**Weightage (%)**
Continuous Assessment	Test	20
	Assignment	20
	Lab Test	10
	Lab Report	10
Summative Assessment	Final Examination	40

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11. **CONTENT OUTLINE OF THE COURSE/MODULE AND THE SLT PER TOPIC:**

Sessions	Topics	LO	L	T	P	OL	Total O	Total A	Total IL
1-4	**Operating System Overviews** Introduction to Operating Systems, Computer System Structures, Operating System Structures, Linux System Structure, Virtual Machine, Computing Environments and Open-Source Operating System	**1,4**	2		2	1			
5-6	**Operating System Structures** Operating System Services, User Operating System Interface, System Calls, Types of System Calls, System Programs, Operating System Design and Implementation	**1,2**	2		2	1			
7-11	**Process Management** Process, Process Control Block, Process States, Threads, Types of Threads, Multithreading.	**1,2**	4		4	1			
12-16	**Process Scheduling** Basic Concepts, Scheduling Criteria, Scheduling algorithms, Thread Scheduling, Multiple-Processor Scheduling.	**1,2**	4		4	2			
17-19	**Deadlock** Deadlock Problem, Deadlock Characterization, Deadlock Detection, Deadlock recovery	**1,2**	4		4	2			
20-21	**Memory Management** Background, Swapping, Contiguous Memory Allocation, Segmentation, Paging, Structure of the Page Table	**1,2**	4		4	2			
22-23	**File System** File Concepts, Access Methods, Directory and Disk Structure, File-System Mounting, File Sharing, Protection Censorship	**1,2,4**	4		4	2			
24-26	**Security and Protection Mechanism** Security Environment, Design Principles Of Security, User Authentication, Security, Protection Domain, Access Control List Problem, Program Threats	**3,4**	2		2	2			
27-28	**Network Operating System** Characteristic, Multiuser, Multitasking, Multiprocessor, Choosing a NOS, Type of NOS	**1**	2		2	1			
	Final Examination								
	TOTAL		28	0	28	14		4	86

Lecture (L), Tutorial (T), Practical (P), O (Other), Assessment (A), Online learning(OL); Independent Learning (IL); Learning Outcome (LO)

12. Main reference(s) supporting course:

BASIC TEXT(S):

1. A Silberschatz,., P.B., Galvin and G.Gagne., (2013) Operating Systems Concepts, 9th Edition, John Wiley and Sons,Inc.

REFERENCES:

1. M Michael, (2011), *Suse Linux 11 Unleashed*, 3rd Edition, John Wiley and Sons.
2. Kerrisk.M., (2011), *The Linux Programming Interface: A Linux and UNIX System Programming Handbook*, 1st edition, No Starch Press.

13. **OTHER ADDITIONAL INFORMATION** (if any):

Final Examination Format:
Duration: 2 hours
Section A: Answer TWO compulsory questions.
Section B: Answer any TWO out of THREE 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 (50-100), Resit Fail (0-49).

Laboratory Work Specification:

Week	Practical Work
1	Introduction to Linux Operating system Files and processes, The Directory Structure, Starting Linux terminal
2 - 4	Manage Linux File System Understand the File System Hierarchy Standard (FHS), Identify File Types in the Linux System, Change Directories and List Directory Contents, – Create and View Files, Work with Files and Directories,– Find Files on Linux and Search File Content Get to Know Linux Text Editors, Us the Editor vi to Edit Files
5- 6	Work with the Linux Shell and CLI Get to Know the Command Shells – Understand the Multiuser Environment – Execute Commands at the Command Line – Get to Know Common Command Line Tasks – Understand Command Syntax and Special Characters
8-12	Manage Users, Groups, and Permissions – Manage User and Group Accounts from the CLI - Manage User and Group Accounts from YAST2 – Manage File Permissions and Ownership – Ensure File System Security
13 - 14	Service and Networking Configuring Linux system to perform system installation of network services, log files and utility files in Linux

Important Note:
A student who obtains a grade C- (45 -49 marks) in a 100% coursework module is required to resubmit the coursework component determined by the lecturer and ascertained at the Exam Board. Resubmission marks will be capped at a maximum of 50 marks or a grade C.

A passing mark can only be achieved when the student attempts both the coursework and final exams.

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