Linux Administration

Module Information					
Module Title	**Linux Administration**			**Module Delivery**	
Module Type	**Core**			☒ **Theory**	
Module Code	**CYBT100**			☒ **Lecture**	
ECTS Credits	**5**			☒ **Lab**	
SWL (hr/sem)	**125**			☐ **Tutorial**	
				☐ **Practical**	
				☒ **Seminar**	
Module Level	UGx11 1		**Semester of Delivery**	1	
Administering Department	Cyber Security Techniques Engineering		**College**	Technical Engineering College for computer and AI / KIRKUK	
Module Leader			**e-mail**	E-mail	
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	31/12/2025		**Version Number**	1.0	

Relation with other Modules			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1. Introducing the fundamentals and principles of Linux administration using Linux operating system. 2. starts from scratch to network monitoring applications. 3. Improving the skills of the students through several Linux implementations and scripts writing. 4. The students should be able to understand the uses and purpose of using scripts and retrieve important network settings and packets sending and receiving information. 5. Help the students perform the needed cyber security works as well as qualifying him to use the different kinds of shell scripting style and instructions to build & execute the projects of cyber security engineering.
Module Learning Outcomes	1. Understanding the fundamentals of Linux administration. 2. Mastering Linux Instructions and commands, including common users administration & Permissions. 3. Becoming familiar with the Linux operating system and its distributions. 4. Being competent in common Networking & Configuring Network Settings and Package Management. 5. Being able to perform Bash Scripting and Execute shell command. 6. Being able to write complete shell scripts to perform I/O Manipulation and I/O Redirections
Learning and Teaching Strategies	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL)				
Structured SWL (h/sem)		79	**Structured SWL (h/w)**	5
Unstructured SWL (h/sem)		96	**Unstructured SWL (h/w)**	6
Total SWL (h/sem)		**175**		

Module Evaluation				
As		**Time/Number**	**Weight (Marks)**	**Week Due**
Formative assessment	**Quizzes**	4	10% (10)	3,6,9,12
	Assignments	8	5% (5)	Every other week
	Projects / Lab.	14	10% (10)	Continuous
	Report	2	5% (5)	7
Summative assessment	**Midterm Exam**	2hr	10% (10)	7
	Final Exam	3hr	50% (50)	15
Total assessment			100% (100 Marks)	

Code BCYSCE 403-S2	Name of the Course Unit	Semester	In-Class Hours (T+P)	Credit	ECTS Credit
LINUX	**Linux Administration**	**1**	**2+3**		**5**

ADMINISTRATION - PROGRAMME COURSE DESCRIPTION

GENERAL INFORMATION	
Language of Instruction :	**English**
Level of the Course Unit :	**BACHELOR'S DEGREE**
Type of the Course :	**Compulsory**
Mode of Delivery of the Course Unit	**Face to Face**
Coordinator of the Course Unit	

GENERAL INFORMATION	
Instructor(s) of the Course Unit	

OBJECTIVES AND CONTENTS	
Objectives of the Course Unit:	Introducing the fundamentals and principles of Linux administration using Linux operating system. starts from scratch to network monitoring applications. Improving the skills of the students through several Linux implementations and scripts writing. The students should be able to understand the uses and purpose of using scripts and retrieve important network settings and packets sending and receiving information. Help the students perform the needed cyber security works as well as qualifying him to use the different kinds of shell scripting style and instructions to build & execute the projects of cyber security engineering.
Contents of the Course Unit:	• Linux Fundamentals • Users & Permissions • Networking & Package Groups • Linux Services • Bash Scripting • Shell script • I/O Manipulation and I/O Redirections

	Delivery Plan (Weekly Syllabus)
WEEK	**KEY LEARNING OUTCOMES OF THE COURSE UNIT (On successful completion of this course unit, students/learners will or will be able to)**
1	Linux Fundamentals: Linux Distros & History, Debian vs RedHat, Basic Commands.
2	Linux Fundamentals: Debian vs RedHat.
3	Linux Fundamentals: Basic Commands.
4	Users & Permissions: File System & File Structure
5	Users & Permissions: Users & Groups, Permissions
6	Networking & Package Groups: Package Management.
7	Networking & Package Groups: Configuring Network Settings.

	Delivery Plan (Weekly Syllabus)
WEEK	**KEY LEARNING OUTCOMES OF THE COURSE UNIT (On successful completion of this course unit, students/learners will or will be able to)**
8	Linux Services: Apache, Creating a Basic Website
9	Linux Services: SSH & Telnet
10	Linux Services: FTP, SMB
11	Bash Scripting, Data types and variables, Execute shell command
12	Shell Scripting, Loops function
13	Shell conditions, and arithmetic comparisons
14	I/O Manipulation, I/O Redirections
15	Review
16	Final Exam

Delivery Plan (Weekly Lab. Syllabus)	
Week	**Material Covered**
Week 1	Lab1: Installation of Linux OS.
Week 2	Lab2 : Basic Command 1
Week 3	Lab 3: Visual interface (VI Editor)
Week 4	Lab 4: User Administration and Group Administration

Week 5	Lab5: Permissions and Access control List
Week 6	Lab 6: Change ownership of files and directories and Change group owner of files and directories
Week 7	Lab 7: Partitions and Swap partition (Virtual memory)
Week 8	Lab 8: Disk Quotas and Logical Volume Manager (LVM)
Week 9	Lab 9: Redundant party of independent disks (RPID) and Backup and restore using CPIO Command
Week 10	Lab 10: Backup and restore using TAR and Filter the Archive through BZIP2(-J) and Backup and restore using TAR and Filter the Archive through GZIP2(-z)
Week 11	Lab 11: Redundant party of independent disks (RPID)
Week 12	Lab 12: Backup and restore using CPIO Command
Week 13	Lab 13: Backup and restore using TAR and Filter the Archive through BZIP2(-J)
Week 14	Lab 14: Review
Week 15	**Final Exam**

WORKLOAD & ECTS CREDITS OF THE COURSE UNIT

Linux Administration

Workload for Learning & Teaching Activities

Type of the Learning Activates	Learning Activities (# of week)	Duration (hours, h)	Workload (h)
Lecture & In-Class Activities	15	2	30
Preliminary & Further Study	NA	NA	NA
Land Surveying	NA	NA	NA
Group Work	NA	NA	NA
Laboratory	15	3	45
Reading	6	1	6
Assignment (Homework)	8	2	16
Project Work	NA	NA	NA
Seminar	1	1	1
Internship	NA	NA	NA
Technical Visit	NA	NA	NA
Web Based Learning	6	2	12
Implementation/Application/Practice	NA	NA	NA
Practice at a workplace	NA	NA	NA
Occupational Activity	NA	NA	NA
Social Activity	NA	NA	NA
Thesis Work	NA	NA	NA
Field Study	NA	NA	NA

Report Writing	2	2	4
Final Exam -Theory	1	3	3
Final Exam - Practical	1	1	1
Preparation for the Final Exam-Theory	1	20	20
Preparation for the Final Exam - Practical	1	15	15
Mid-Term Exam - Theory	1	2	2
Mid-Term Exam - Practical	1	1	1
Preparation for the Mid-Term Exam	1	15	15
Short Exam (Quizzes)	4	0.5	2
Preparation for the Short Exam (Quizzes)	4	2	8
Total Workload of the Course Unit			175

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	**1.** Unix And Linux®System Administration Handbook. Fourth Edition, Evi Nemeth Garth Snyder,Trent R. Hein and Ben Whaley	yes
Recommended Texts	1. Modern Linux Administratio (2016) by Sam R. Alapati. 2. LINUX SYSTEM ADMINISTRATION by *Tom Adelstein and Bill Lubanovic*	yes
Websites		

Grading Scheme			
Group	**Grade**	**Marks %**	**Definition**
	A - Excellent	90 - 100	Outstanding Performance

Success Group **(50 - 100)**	**B -** Very Good	80 - 89	Above average with some errors
	C - Good	70 - 79	Sound work with notable errors
	D -Satisfactory	60 - 69	Fair but with major shortcomings
	E - Sufficient	50 - 59	Work meets minimum criteria
Fail Group **(0 – 49)**	**FX –** Fail	(45-49)	More work required but credit awarded
	F – Fail	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.