

MODULE DESCRIPTION FORM

Linux Administration

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Linux Administration		Module Delivery	
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar	
Module Code	BCYSCE105-S1			
ECTS Credits	7			
SWL (hr/sem)	175			
Module Level	1	Semester of Delivery		1
Administering Department	CYSCE	College	TECM	
Module Leader	Dr. Zakaria Noor Aldeen Mahmood		e-mail	E-mail
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Ph.D.	
Module Tutor			e-mail	zakaria@ntu.edu.iq
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date	20/06/2023	Version Number	1.0	

Relation with other Modules				
العلاقة مع المواد الدراسية الأخرى				
Prerequisite module	Introduction to Cyber Security Engineering (BCYSCE107-S2)		Semester	2
Co-requisites module			Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	<ol style="list-style-type: none"> 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 مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> 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

استراتيجيات التعلم والتعليم

Strategies	<p>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.</p>
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Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	96	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation				
تقييم المادة الدراسية				
		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 Administration	2	2+3		7
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		Dr. Zakaria Noor Aldeen Mahmood			
Instructor(s) of the Course Unit		Dr. Zakaria Noor Aldeen Mahmood			
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:		<ul style="list-style-type: none">• Linux Fundamentals• Users & Permissions• Networking & Package Groups• Linux Services• Bash Scripting• Shell script• I/O Manipulation and I/O Redirections			
	Delivery Plan (Weekly Syllabus)				
	المنهاج الاسبوعي النظري				
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				

	Delivery Plan (Weekly Syllabus) المناهج الاسبوعي النظري
WEEK	KEY LEARNING OUTCOMES OF THE COURSE UNIT (On successful completion of this course unit, students/learners will or will be able to)
5	Users & Permissions: Users & Groups, Permissions
6	Networking & Package Groups: Package Management.
7	Networking & Package Groups: Configuring Network Settings.
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) المناهج الاسبوعي للمختبر
	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

Learning and Teaching Resources				
مصادر التعلم والتدريس				
	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 <i>Tom Adelstein and Bill Lubanovic</i>			yes
Websites				
Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(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.				

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