

Manipal School of Information Sciences (MSIS)
Manipal Academy of Higher Education, Manipal
Master of Engineering - ME (Cyber Security)

Course File

Course Name : Linux OS and Scripting Lab
Course Code : CYS 5153
Academic Year : 2024 – 25
Semester : I
Name of the Course Instructor : Mrs. Keerthana B
Name of the Program Coordinator : Mrs. Keerthana B



**Signature of Programme coordinator with
date**



**Signature of Course Coordinator with
date**

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Program Education Objectives (PEOs)

The overall objectives of the Learning Outcomes-based Curriculum Framework (LOCF) for **ME (Cyber Security)**, program are as follows.

PEO No.	Education Objective
PEO 1	To prepare students with the technical knowledge and skills needed to protect and defend computer systems, mobile devices, and networks.
PEO 2	To develop students' skills who can plan, implement, and monitor cyber security mechanisms to help ensure the protection of information technology assets.
PEO 3	To develop students who can identify, analyze, and remediate IT security breaches within the limits of cyber laws and ethical practices.
PEO 4	Possess analytical, communicative and leadership skills, and demonstrate the ability to work in multidisciplinary and multi-cultural environments.
PEO 5	Be Self-motivated and remain continuously employable by engaging in lifelong learning.

Program Outcomes (POs)

By the end of the postgraduate program in Cyber Security, graduates will be able to:

PO1	Independently carry out research investigation and development work to solve practical problems
PO2	An ability to write and present a substantial technical report/document
PO3	Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.
PO4	Ability to Identify, Analyze and evaluate the cybersecurity needs of an organization.
PO5	Develop knowledge in Cybersecurity to Monitor, Prevent, Predict and Detect and counter measure cyberattacks using tools and techniques using appropriate Security tools.

1. Course Plan

1.1 Primary Information

Course Name	:	Linux OS and Scripting
L-T-P-C		3-0-0-3
Contact Hours	:	36 Hours
Pre-requisite	:	Basic Programming skills

1.2 Course Outcomes (COs), Program outcomes (POs) and Bloom's Taxonomy Mapping

CO	At the end of this course, the student should be able to:	No. of Contact Hours	Program Outcomes (PO's)	BL
CO1	Apply Linux command in real world applications.	3	PO1	3
CO2	Create a Shell Scripting to analyze and create a report.	6	PO3	3
CO3	Create a script to automate tasks using scripting languages.	3	PO4	4

1.3 Assessment Plan

Components	Lab Test	Flexible Assessments (2 – 3 in number)	End semester/Makeup examination
Duration	90 minutes	To be decided by the faculty.	180 minutes
Weightage	0.3	0.2	0.5
Typology of questions	Applying; Analyzing.	Applying; Analyzing.	Applying; Analyzing;
Pattern	Answer all the questions. Maximum marks 30.	Assignment: Problems in file management, process management and shell scripting.	Answer all the questions. Maximum marks 50.
Schedule	As per academic calendar.	Assignment submission: November 2024	As per academic calendar.

Topics covered	File Management, Shell Scripting		Comprehensive examination covering the topics covered in the lab
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1.4 Lesson Plan

L. No.	TOPICS	Course Outcome Addressed
L0	Course delivery plan, Course assessment plan, Course outcomes, Program outcomes, CO-PO mapping, reference books	---
Lab1	Basic Linux Commands - File Management Commands	CO2
Lab2	Introduction to Scripting, Basic Commands in Bash Scripting	CO1
Lab3	Shell and Command Line Processing, Redirection – Pipe - grep	CO2
Lab4	Shell scripting	CO1
Lab5	Shell scripting	CO2
Lab6	Shell scripting	CO2
Lab7	Shell scripting	CO1
Lab8	Shell scripting	CO1
Lab9	Shell scripting	CO2
Lab10	Python Automation	CO2

Lab11	Python Automation	CO2
Lab12	Python Automation	CO3

1.5 References

1. Linux Basics for Hackers: Getting Started with Networking, Scripting, and Security in Kali, OccupyTheWeb, No Starch Press, 2018.
2. Operating System principles, Abraham Silberschatz, Peter Galvvin, Grag Gagne, Seventh Edition John Wiley Publications,2005
3. Advanced Bash Scripting Guide, Mendel Cooper, 2014.

1.6 Other Resources (Online, Text, Multimedia, etc.)

1. Web Resources: (<https://tldp.org/LDP/abs/html/>), Blog, Online tools and cloud resources.
- 2 Journal Articles.

1.7 Course Timetable

1 st Semester Data Structures and algorithms				Room: LG1 LH 12				
	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5
MON								
TUE								
WED								
THU								
FRI						LOS Lab		
SAT								

1.8

COs		Marks& weightage			
CO No.	CO Name	Lab Test (Max. 30)	Assignment (Max. 20)	End Semester (Max. 50)	CO wise Weightage
CO2	Apply Understand and acquire knowledge in Linux environment and its different utilities	15	10	10	0.35
CO3	Apply Understand and apply Shell Scripting Programmatically using different features and debugging the code.	15	10	40	0.65
	Marks (weightage)	0.3	0.2	0.5	1.0

Note:

- In-semester Assessment is considered as the Internal Assessment (IA) in this course for 50 marks, which includes the performances in lab participation, assignment work, lab work, lab tests, quizzes etc.
- End-semester examination (ESE) for this course is conducted for a maximum of 50.
- End-semester marks for a maximum of 50 and IA marks for a maximum of 50 are added for a maximum of 100 marks to decide upon the grade in this course.

Weightage for CO1 = (Lab Test marks for CO1 + Assignment marks for CO1 + ESE marks for CO1) /100

$$= (15 + 10 + 10)/100 = 0.35$$

1.9 Assessment Details

The assessment tools to be used for the Current Academic Year (CAY) are as follows:

Sl. No.	Tools	Weightage	Frequency	Details of Measurement (Weightage/Rubrics/Duration, etc.)
1	Lab Test	0.3	1	<ul style="list-style-type: none"> • Performance is measured using lab internal test attainment level. • Reference: question paper and answer scheme. • Lab internal test is assessed for a maximum of 30 marks.
2	Assignments	0.2	1	<ul style="list-style-type: none"> • Performance is measured using assignments attainment level. • Assignment is evaluated for a maximum of 20 marks.
3	ESE	0.5	1	<ul style="list-style-type: none"> • Performance is measured using ESE attainment level. • Reference: question paper and answer scheme. • ESE is assessed for a maximum of 50 marks.

1.10 Course Articulation Matrix

CO	PO1	PO2	PO3	PO4	PO5
CO1			*	*	
CO2			*	*	*
CO3	*				*
Average Articulation Level	*		*	*	*

