

CCL333	SYSTEM AND NETWORK SECURITY LAB	CATEGORY	L	T	P	CREDITS
		PCC	0	0	4	2

Preamble: The course aims to offer students a hands-on experience on network related commands and configuration files in Linux operating system. This course also introduces tools for network traffic analysis and network monitoring and also provides hands-on experience in tools used in security.

Prerequisite: C programming, Operating Systems and Computer Networks.

Course Outcomes: At the end of the course the student will be able to

CO1	Familiarize tools to prevent latest threats (Cognitive Knowledge Level : Understand)
CO2	Analyze the network traffic using sniffing tools. (Cognitive Knowledge Level : Apply)
CO3	Use network scanning tools (Cognitive Knowledge Level : Apply)
CO4	Familiarize various Steganography tools (Cognitive Knowledge Level : Understand)
CO5	Use tools for Penetration testing (Cognitive Knowledge Level : Understand)

Mapping of course outcomes with program outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓	✓	✓		✓							✓
CO2	✓	✓	✓		✓							✓
CO3	✓	✓	✓		✓							✓
CO4	✓	✓	✓		✓							✓
CO5	✓	✓	✓		✓							✓
CO6	✓	✓	✓		✓							✓

Abstract Pos defined by National Board of Accreditation			
PO#	Broad PO	PO#	Broad PO
PO1	EngineeringKnowledge	PO7	EnvironmentandSustainability
PO2	ProblemAnalysis	PO8	Ethics
PO3	Design/Developmentofsolutions	PO9	Individualandteamwork
PO4	Conduct investigations of complexproblems	PO10	Communication
PO5	Moderntoolusage	PO11	ProjectManagementandFinance
PO6	TheEngineerandSociety	PO12	Lifelong learning

Assessment Pattern:

Bloom's Category	Continuous Assessment Test(Internal Exam) Marks inpercentage	EndSemesterExamination Marks inpercentage
Remember	20	20
Understand	20	20
Apply	60	60
Analyze		
Evaluate		
Create		

Mark Distribution:

TotalMarks	CIE Marks	ESE Marks	ESE Duration
150	75	75	3hours

Continuous Internal Evaluation Pattern:

Attendance	: 15
Continuous Evaluation in Lab	: 30
ContinuousAssessmentTest	: 15
VivaVoce	: 15

Internal Examination Pattern:

The marks will be distributed as Algorithm 30 marks, Program 20 marks, Output 20 marks and Viva 30 marks. Total 100 marks which will be converted out of 15 while calculating Internal Evaluation marks.

End Semester Examination Pattern:

The percentage of marks will be distributed as Algorithm 30 marks, Program 20 marks, Output 20 marks and Viva 30 marks. Total 75 marks.

Operating System to Use in Lab : Linux

Compiler/Software to Use in Lab : gcc

Programming Language to Use in Lab : AnsiC

Fair Lab Record:

All Students attending the System and Network Security Lab should have a Fair Record. The fair record should be produced in the University Lab Examination. Every experiment conducted in the lab should be noted in the fair record. For every experiment in the fair record, the right hand page should contain Experiment Heading, Experiment Number, Date of experiment, Aim of the Experiment and the operations performed on them, Details of experiment including algorithm and result of Experiment. The left hand page should contain a print out of the code used for experiment and sample output obtained for a set of input.

Syllabus**SYSTEM & NETWORK SECURITY LAB**

* mandatory

1. Preventing PC against latest threats using Windows Defender*.
2. Protecting PC using Microsoft Security Essentials*.
3. Steganographic Tools*
4. Website mirroring using HTTrack*
5. Monitoring Live Network capturing packets and analyzing over the live network using Wireshark*
6. Network discovery and security auditing with nmap.*
7. Password Guessing and Password cracking*
8. Port Scanning using Superscan
9. Monitoring Network Communication: Working with Trojans, Backdoors and

sniffer*

CSE(CYBER SECURITY)

10. Penetration testing and justification of penetration testing through risk analysis
11. Vulnerability Scanning*
12. Monitoring Network Communication: Working with Trojans, Backdoors and sniffer*

PRACTICE QUESTIONS

1. Write a program to create a process in Linux.
2. Write programs using the following system calls of Linux operating system:
fork, exec, getpid, exit, wait, close, stat, opendir, readdir
3. Write programs using the I/O system calls of Linux operating system(open,read,write)
4. Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chart for FCFS and SJF. For each of the scheduling policies, compute and print the average waiting time and average turn around time.
5. Write a C program to simulate following non-preemptive CPU scheduling algorithms to find turn a round time and waiting time.
a)FCFS b)SJF c)Round Robin(pre-emptive) d)Priority
6. Write a program to prevent PC against latest threats using Windows Defender.
7. Write a program to Protect PC using Microsoft Security Essentials.
8. a) View the configuration, including addresses of your computers network interfaces.
b) Test the network connectivity between your computer and several other computers.
c) View the active TCP connections in the computer after visiting a website.
d) Find the hardware/MAC address of another computer in the network using ARP.
9. Write a program to implement Client-Server communication using Socket Programming and TCP as transport layerprotocol.
10. Write a program to implement Client-Server communication using Socket Programming and UDP as transport layerprotocol.
11. Write a program to implement a multi user chat server using TCP as transport layer protocol.
12. Write a program to implement a simple web proxy server that accepts HTTP requests and forwardingto remote servers and returning data to the client using TCP.
13. Write a program to implement Concurrent Time Server application using UDP to execute the program at remote server. Client sends a time request to the server; server

sends its system time back to the client. Client displays the result.

14. Write a program to implement Simple Mail Transfer Protocol.
15. Develop concurrent file server which will provide the file requested by client if it exists. If not server sends appropriate message to the client. Server should also send its process ID (PID) to clients for display along with file or the message.
16. Develop a packet capturing and filtering application using raw sockets.
17. Design and configure a network with multiple subnets with wired and wireless LANs using required network devices. Configure the following services in the network- TELNET, SSH, FTP server, Web server, File server, DHCP server and DNS server.



Assessment Pattern

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	Test1 (Percentage)	Test2 (Percentage)	
Remember	30	30	30
Understand	40	40	40
Apply	30	30	30
Analyse			
Evaluate			
Create			

Mark Distribution

Total Marks	CIE Marks	ESE Marks	ESE Duration
150	50	100	3 hours

Continuous Internal Evaluation Pattern:

Attendance : 10 marks

Continuous Assessment Tests : 25 marks

Continuous Assessment Assignment : 15 marks

Internal Examination Pattern:

Each of the two internal examinations has to be conducted out of 50 marks. First Internal Examination shall be preferably conducted after completing the first half of the syllabus and the Second Internal Examination shall be preferably conducted after completing remaining part of the syllabus.

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