

**DAYANANDA SAGAR COLLEGE OF ENGINEERING**

(An Autonomous Institute Affiliated to VTU, Belagavi) Approved by AICTE & ISO 9001:2008 Certified)

Accredited by National Assessment & Accreditation Council (NAAC) with 'A' grade

Shavige Malleshwara Hills, Kumaraswamy Layout, Bengaluru-560078

**DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING  
SCHEME 2018****COMPUTER NETWORKS AND CYBER SECURITY LABORATORY****Course code: 18IS5DLCNS****Credits: 02****L: P: T: S: 0: 2: 1: 0****CIE Marks: 50****Exam Hours: 03****SEE Marks: 50****Course Objectives:**

1. To understand the design and implementation of routing concepts
2. To gain insight into flow control and congestion control mechanisms
3. To understand the concept of wired networks using TCP through simulation
4. To understand the concept of wireless networks using UDP through simulation

**Course Outcomes: After completion of the course, the graduates will be able to**

<b>CO1</b>	Implement and analyze networking protocols in NS2
<b>CO2</b>	Implement and use routing protocols.
<b>CO3</b>	Implement cryptographic algorithms like RSA for data communication
<b>CO4</b>	Implement congestion control algorithms like leaky bucket.
<b>CO5</b>	Demonstrate various cyber security concepts like ARP poisoning, man in the middle attack.
<b>CO6</b>	Demonstrate the working of different concepts of networking.

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**Mapping of Course outcomes to Program outcomes:**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
<b>CO1</b>	2	2	2	-	-	-	-	-	-	-	-	2	-	-	2
<b>CO2</b>	2	3	-	-	-	-	-	-	-	-	-	1	-	2	2
<b>CO3</b>	3	3	2	2	-	-	-	-	-	-	-	2	-	2	2
<b>CO4</b>	3	3	2	2	-	-	-	-	-	-	-	2	-	2	2
<b>CO5</b>	3	3	-	-	-	-	-	-	-	-	-	2	-	2	1
<b>CO6</b>	3	3	-	-	-	-	-	-	-	-	-	2	-	-	1

**Description (If any):** For the experiments below modify the topology and parameters set for the experiment, take multiple rounds of reading, and analyze the results available in log files. Plot necessary graphs and conclude. Use NS2/NS3.

<b>Experiment No.</b>	<b>Contents of the experiment</b>	<b>Hours</b>	<b>Cos</b>
1.	Implement three nodes point – to – point network with duplex links between them. Set the queue size, vary the bandwidth and find the number of packets dropped.	3	CO1
2.	Implement transmission of ping messages/trace route over a network topology consisting of 6 nodes and find the number of packets dropped due to congestion.	3	CO1
3.	Implement an Ethernet LAN using n nodes, set multiple traffic nodes, and plot congestion window for different source / destination.	3	CO1
4.	Implement simple ESS and with transmitting nodes in wire-less LAN by simulation and determine the performance with respect to transmission of packets.	3	CO1
5.	Write a program for congestion control using leaky bucket algorithm.	3	CO1 CO5
6.	Write a program for distance vector algorithm to find suitable path	3	CO1

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	for transmission		CO5
7.	Write a program for simple RSA algorithm to encrypt and decrypt the data.	3	CO1 CO3 CO4
8.	Using TCP/IP sockets, write a client – server program to make the client send the file name and to make the server send back the contents of the requested file if present.	3	CO1
9.	Demonstrate Deauthentication Attack using Kali Linux	3	CO1
10.	Demonstrate Detection of ARP poisoning using Kali linux	3	CO1 CO3
11.	Demonstrate Prevention of man in the middle attack using Kali Linux	3	CO1 CO4 CO5
12.	Demonstrate Vulnerability assesment (server side attack) using Kali Linux	3	CO1 CO4 CO6

**TEXT BOOKS:**

1. Communication Networks – Fundamental Concepts & key architectures, Alberto Leon Garcia & Indra Widjaja, 2nd Edition, Tata McGraw-Hill, India
2. Computer & Communication Networks, Nadir F Mir, Pearson Education, India
3. Sunit Belapure and Nina Godbole, “Cyber Security: Understanding Cyber Crimes, Computer Forensics And Legal Perspectives”, Wiley India Pvt Ltd, ISBN: 978-81-265-21791, 2013.
4. Kali Linux Revealed – Mastering the Penetration Testing Distribution, Administrator's *Handbook*, Raphaël Hertzog is the Debian guru in the Kali team.
5. Hacking With Kali Linux : A Comprehensive, Step-By-Step Beginner's Guide to Learn Ethical Hacking With Practical Examples to Computer Hacking, Wireless Network, Cybersecurity and Penetration Testing Kindle Edition, by [Peter Bradley](#) .

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**SCHEME 2018****REFERENCE BOOKS:**

1. Behrouz A. Forouzan: Data Communications and Networking, 4<sup>th</sup> Edition, Tata McGraw-Hill, 2006.
2. William Stallings: Data and Computer Communication, 8th Edition, Pearson Education, 2007.
3. Larry L Peterson and Bruce S Davie: Computer Networks – A Systems Approach, 4th Edition, Elsevier, 2007.
4. Wayne Tomasi: Introduction to Data Communications and Networking, Pearson Education, 2005.

**Assessment Pattern:****CIE –Continuous Internal Evaluation Lab (50 Marks)**

Continual Internal Evaluation Marks (25)	IA Test Marks (25)	Final Marks (50)
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**SEE –Semester End Examination Theory (50 Marks)**