



**National Institute of Technology Tiruchirappalli**  
**Department of Computer Science and Engineering**

Course Plan- PART 1			
<b>Name of the programme and specialization</b>	<b>B.Tech Computer Science and Engineering</b>		
<b>Course Title</b>	<b>Networks Laboratory</b>		
<b>Course Code</b>	<b>CSLR52</b>	<b>No. of Credits</b>	<b>2</b>
<b>Pre-requisites Course Code</b>	<b>CSPC53</b>		
<b>Session</b>	<b>July 2021</b>	<b>Section ( if applicable)</b>	<b>B &amp; A</b>
<b>Faculty Name</b>	<b>Dr. B. Nithya Dr. Chandramani Chaudhary</b>	<b>Department</b>	<b>CSE</b>
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<b>Name of Course Coordinator(s) (If, applicable)</b>	<b>NA</b>		
<b>Course Type</b>	<b>Lab Course</b>		

Syllabus (Approved in Bos)
<p>1. Exercises on Socket Programming using C and Java</p> <p>2. Exercises using NS-3 Network Simulator</p> <p>a. Basics of Network Simulation            – Introduction , Platform required to run network simulator, Backend Environment of Network Simulator, Agents and applications, Tracing</p> <p>b. Simulating a Local Area Network            – Local Area Network, LAN Topologies, MAC Protocol, Taking turns, Ethernet, Ethernet Frame Structure, Ethernet Versions, Simulating a LAN using Network Simulator3            – Implementation of various MAC protocols            – Setting up of various network topologies            – Measurement of routing protocols</p> <p>c. Measuring Network Performance            – Network Performance Evaluation, Performance Evaluation Metrics, Parameters Affecting the Performance of Networks, Performance Evaluation Techniques, Network Performance Evaluation using NS-3</p>

– Setting up of network that carries various application protocols and analyzing the performances

3. Hands on experiments on Network equipments

- a. Switches, Routers
- b. Hardware firewall

**Text Books**

1. W. Richard Stevens, "UNIX Network Programming – Networking APIs: Sockets and XTI", Vol. 1, Second Edition, Prentice Hall, 1998.
2. Eitan Altman, Tania Jimenez, "NS Simulator for Beginners", Morgan & Claypool Publishers, 2011.

**Reference Book**

1. Jack L. Burbank, "An Introduction to Network Simulator 3", First Edition, Wiley-Blackwell, 2015.

**Course Objectives**

- To create client and server applications using the "Sockets" API and the implementation of Data link layer protocols, Network layer protocols and TCP layer
- To conduct computer communication network simulations
- To have a hands on experience of computer network simulation and modeling techniques using NS-2/NS-3 or with any simulation software

**Mapping of COs with POs**

Course Outcomes(CO)	Programme Outcomes(PO)
Invoke analytical studies of Computer Networks through network simulation	1,5,7,11
Design a network using NS-3 toolkit or with any simulation tool and its importance in designing a real network	1,2,3,6,10,12
Measure and analyze the network parameters for a high throughput network	1,6,8,10,11
Practice experiments on Network Equipments	1,8,10,11,12

**Course Plan – PART II**

**Course Overview**

This course emphasizes the simulation of wired network and analysing its performance under various metrics

**Course Teaching and Learning Activities**

Sl. No	Week/Contact Hours	Topic	Mode of Delivery
1.	1 <sup>st</sup> week	Socket Programming 1	- Online Demo along with Viva
2.	2 <sup>nd</sup> week	Socket Programming 2	
3.	3 <sup>rd</sup> week	Simulating Wired LAN with various network topologies	
4.	4 <sup>th</sup> week	Setting up of network that carries various application protocols and analyzing the performances	
5.	5 <sup>th</sup> week	Implementation of UDP protocol & analyzing its performance	
6.	6 <sup>th</sup> week	Implementation of TCP protocol & analyzing	

		its performance	
7.	7 <sup>th</sup> week	Implementation of Unicast Routing protocols & analyzing their performance	
8.	8 <sup>th</sup> week	Implementation of Broadcast Routing protocols & analyzing their performance	
9.	9 <sup>th</sup> week	Implementation of Multicast Routing protocols & analyzing their performance	
10.	10 <sup>th</sup> week	Implementation of MAC protocols & analyzing their performance	

### Course Assessment Methods

Sl. No.	Mode of Assessment	Week/Date	Duration	Marks
1	Continuous assessment	Every lab section	3 hours	25
2	Mini Project 1	Demo after CT2	-	20
3	Mini Project 2	Demo after CT3	-	15
4	Report with less than 10% similarity index	Submission at the end of the Semester	-	10
5	End Semester Exam	As per Academic Schedule	2 hours	30
Total				100

### Course Exit Survey

- Feedbacks are collected before final examination through MIS or any other standard format followed by the institute
- Students, through their Class Representatives, may give their feedback at any time to the course faculty which will be duly addressed.
- The students may also give their feedback during Class Committee Meeting

### Course Policy (including plagiarism, academic honesty, attendance, etc.)

#### MODE OF CORRESPONDENCE (email/ phone etc)

E-mail/Phone

#### ATTENDANCE

- Minimum 75% is mandatory to write the end semester examination. Students having attendance 65% to 74% are eligible for the end semester exam only after attending the extra classes and submitting assignments. Students have to redo the course, if they have less than 65% of attendance.
- Medical Certificate / On Duty Certificate should be submitted immediately after rejoining.

#### COMPENSATION ASSESSMENT

- One compensation assessment will be given after completion of Cycle Test 1 and 2 for the students those who are absent for any assessments due to genuine reason.
- The prior permission and required document must be submitted for the absence.

#### ACADEMIC HONESTY & PLAGIARISM

- Avoid usage of electronic devices during the class or test or exam.
- The students are expected to come out with their original solution for the problems given in the assignment. If found to copy from internet/other students, marks will be reduced.

**Additional Course Information**

The students can get their doubts clarified at any time with their faculty member with prior appointment.

**FOR APPROVAL**

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*Chandramani*

Course Faculty \_\_\_\_\_

CC-Chairperson *C Malhotra* \_\_\_\_\_

HOD *J. K. Singh* \_\_\_\_\_