



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

1. Course Outline			
<b>Course Title</b>	<b>Network Programming Laboratory</b>		
<b>Course Code</b>	<b>CSLR31</b>		
<b>Department</b>	CSE	<b>No. of Credits</b>	2
<b>Pre-requisites Course Code</b>	CSPC27 CSPC32	<b>Faculty Name</b>	Dr. B. Nithya A. Lavanya Mathiyalagi
<b>E-mail</b>	<a href="mailto:nithya@nitt.edu">nithya@nitt.edu</a> <a href="mailto:lavanyaa@nitt.edu">lavanyaa@nitt.edu</a>	<b>Telephone No.</b>	0431 – 2503214
<b>Course Type</b>	Lab Course		

### 2. Course Overview

This course emphasizes the simulation of wired and wireless networks and analysing their performance under various metrics.

### 3. 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 simulation software

### 4. Course Outcomes (CO)

- Ability to invoke analytical studies of Computer Networks through network simulation
- Technical knowledge of the various components in NS-3 toolkit and its importance in designing a real network

5. Course Outcome (CO)	Aligned Programme Outcome (PO)							
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
Ability to invoke analytical studies of Computer	S	B	S	M	B	M	B	M
Technical knowledge of the various components in NS-3 toolkit and its importance in designing a real network	S	B	M	B	M	B	B	S

S = 0.6

M = 0.4

B = 0.0

## 6. Course Teaching and Learning Activities

EX. NO.	Title
1	Socket Programming – Ex1
2	Socket Programming – Ex2
3	Installation of NS2/ NS3 simulator & Execution of simple TCL Scripts
4	Simulating Wired LAN with various network topologies
5	Implementation of Wired LAN MAC protocols & analyzing their performance
6	Implementation of Wired LAN Routing protocols & analyzing their performance
7	Implementation of Wired LAN Transport protocols & analyzing their performance
8	Simulating Wireless network ( Infrastructure based & Infrastructure less networks
9	Implementation of Wireless LAN MAC protocols & analyzing their performance
10	Implementation of Wireless LAN Routing protocols & analyzing their performance

## 7. Course Assessment Methods

Sl. No.	Mode of Assessment	Week/Date	Duration	Marks
1	Continuous assessment	Every lab section	3 hours	50
2	Record	Every lab section	-	10
3	End Semester Exam	-	3 hours	40
Total				100

## 8. Essential Readings (Textbooks, Reference books, Websites, Journals, etc.)

### References

1. W. Richard Stevens, “UNIX Network Programming – Networking APIs: Sockets and XTI”, Vol. 1, 2<sup>nd</sup> Ed, 1998, Prentice Hall
2. Eitan Altman and Tania Jimenez, “NS Simulator for Beginners”, Morgan & Claypool Publishers, 2011
3. Jack L. Burbank, “An Introduction to Network Simulator 3”, 1<sup>st</sup> edition, Wiley-Blackwell, 2015

### 9. Course Exit Survey

- ★ Feedbacks are collected from the student before end semester examination through MIS.

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

**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.**

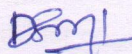
### 11. Additional Course Information

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

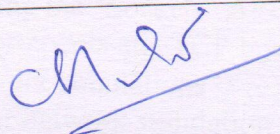
#### FOR SENATE'S CONSIDERATION

Course Faculty

(A. Lavanya Mathiyalagi)

  
C.B. Withya

CC-Chairperson



HOD

