

Branch Name:	COMPUTER ENGINEERING (SOFTWARE ENGINEERING)
Program Code:	ET203
Course Title:	High Speed Network Practical
Course Code:	2ET2030308P
Pre-requisite Course:	Basic networking knowledge and a familiarity with data communication principles.

Course Objectives: After successful completion of the course, student will be able to

1. Simulate a high-speed network using NS-3
2. Use and learn Wireshark to analyze packet-level details and network performance.
3. Analysis QoS mechanisms (e.g., DiffServ, IntServ) in a network.
4. Learn SDN environment using OpenFlow controllers
5. High-speed data transmission using fiber optic cables.
6. Intrusion Detection System (IDS) or Intrusion Prevention System (IPS) for network traffic analysis.

Teaching and Examination Scheme:

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								
					Theory (Marks)				Practical (Marks)				Total (Marks)
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
1	-	-	2	2	—	—	—	—	10	25	10	25	50

Course Contents:

Unit	Details	Contact Hours
1	Network Simulation using NS-3	4
2	Performance Analysis with Wireshark	3
3	Quality of Service (QoS) Implementation	4
4	Software-Defined Networking (SDN) Lab	4
5	High-Speed Data Transmission using Fiber Optics	3
6	Network Traffic Analysis with IDS/IPS	3
7	Wireless Network Performance Testing	4
8	Network Security Assessment	4

Reference Books:

1. <https://www.scribd.com/doc/110015407/Hi-Speed-Networks-Syllabus>
2. <https://www.cl.cam.ac.uk/teaching/1718/P51/syllabus.pdf>
3. https://www.pondiuni.edu.in/wp-content/uploads/2020/06/Syllabus-M.Tech_NetworkAndInformationSecurity2020-21.pdf
4. https://www.jcboseust.ac.in/electronics/images/sy/2019/mtech_ece_2019_2

Course Outcomes:

At the end of the course, students will be able to:

Course Outcomes	Description	Bloom's Taxonomy Level
CO1	Understanding of network simulation tools, hands-on experience in configuring network parameters, and analyzing simulation results.	Understanding (2), Applying (3)
CO2	Proficiency in using network analysis tools, ability to identify and troubleshoot performance issues.	Understanding (2), Applying (3)
CO3	Understanding of QoS principles, practical experience in configuring and optimizing network for better performance	Understanding (2), Applying (3)
CO4	Hands-on experience with SDN, understanding of programmable networks, and their advantages	Understanding (2), Applying (3)
CO5	Understanding of fiber optic communication, practical skills in configuring high-speed data links.	Understanding (2), Applying (3)
CO6	Understanding of network security, practical skills in identifying and mitigating network threats	Understanding (2), Applying (3)

Mapping of CO with PO and PSO

Course Outcomes	Program Outcomes (POs)												Program Specific Outcomes(PSOs)			
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3	PS O4
CO1	H	M	M	L	M						L	M				
CO2	H	M	L	L	M						L	L				
CO3	H	M	M	L	L						L	M				
CO4	M	M	M	M	L						H	L				
CO5	H	L	L	M	M						H	L				
CO6	H	M	L	M	H						H	L				

H: High, M: Medium, L: Low