

Software Defined Networks

Course Code	20CS4601B	Year	III	Semester	II
Course Category	PEC	Branch	CSE	Course Type	Theory
Credits	3	L-T-P	3-0-0	Prerequisites	Computer Networks
Continuous Evaluation :	30	Semester End Evaluation:	70	Total Marks:	100

Course Outcomes

Upon successful completion of the course, the student will be able to

CO1	Understand the concepts of Software Defined Networks	L2
CO2	Apply various SDN Principles with different Architectures	L3
CO3	Apply concepts of Virtualization, Framework solutions on Data Centres	L3
CO4	Analyse a given scenario and implement Social Defined Networks	L4

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3:Substantial, 2: Moderate, 1:Slight)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO 1	3													
CO 2	3													
CO 3													3	
CO 4		3								1		1		

Syllabus		Mapped CO
Unit No.	Contents	
I	INTRODUCTION: History of Software Defined Networking (SDN) – Modern Data Center – Traditional Switch Architecture – Why SDN – Evolution of SDN – How SDN Works – Centralized and Distributed Control and Data Planes	CO1
II	OPEN FLOW & SDN CONTROLLERS: Open Flow Specification – Drawbacks of Open SDN, SDN via APIs, SDN via Hypervisor- Based Overlays – SDN via Opening up the Device – SDN Controllers – General Concept	CO1, CO2, CO4
III	DATA CENTERS: Multitenant and Virtualized Multitenant Data Center – SDN Solutions for the Data Center Network – VLANs – EVPN – VxLAN – NVGRE	CO1, CO2, CO4
IV	SDN PROGRAMMING: Programming SDNs: Northbound Application Programming Interface, Current Languages and Tools, Composition of SDNs – Network Functions Virtualization (NFV) and Software Defined Networks: Concepts, Implementation and Applications	CO1, CO3, CO4
V	SDN: Juniper SDN Framework – IETF SDN Framework – Open Daylight Controller – Floodlight Controller – Bandwidth Calendaring – Data Center Orchestration	CO1, CO3, CO4

Learning Resources

Text Books

1. Paul Goransson and Chuck Black, —Software Defined Networks: A Comprehensive Approach, First Edition, Morgan Kaufmann, 2014.
2. Thomas D. Nadeau, Ken Gray, —SDN: Software Defined Networks, O'Reilly Media, 2013.

References

1. Siamak Azodolmolky, —Software Defined Networking with Open Flow, Packet Publishing, 2013.
2. Vivek Tiwari, —SDN and Open Flow for Beginners, Amazon Digital Services, Inc., 2013.
3. Fei Hu, Editor, —Network Innovation through Open Flow and SDN: Principles and Design, CRC Press, 2014.

e-Resources & other digital material

1. <https://www.coursera.org/learn/sdn>.
2. <https://www.udemy.com/course/sdn-openflow-nfv-introduction/>
3. <https://www.coursera.org/learn/network-virtual>.