



Mehran University of Engineering and Technology, Jamshoro
Department of Software Engineering

Title of Subject	:	<u>Software Defined Networks (SE802)</u>	
Discipline	:	Software Engineering	
Effective	:	24PhDSE & onwards	
Pre-requisite	:	Computer Networks	
Assessment	:	Theory: 10% Sessional, 30% Mid, 60% Final examination	
Credit Hours	:	3 + 0	Marks: 100
Minimum Contact Hours:		42	

Objectives of course:

- Demonstrate advanced knowledge of networking concepts and extend their expertise to encompass the realm of software-defined networking.
- Communicate their advanced understanding of networking principles, applying them effectively in the context of software-defined networking.
- Articulate the concepts of software-defined networks skillfully through the creation of well-written reports, design documentation, and specifications.

Course outline:

- Overview of SDN and its importance in modern networks.
- Understanding the concept of data and control plane abstraction in SDN.
- Introduction to the OpenFlow specification for SDN communication.
- Exploring alternative definitions of SDN and emerging protocol models.
- Explanation of NFV and its benefits in decoupling network functions from hardware.
- Different NFV deployment models and architectures.
- Integration of NFV with SDN for enhanced network flexibility.
- Programming interfaces and frameworks for SDN application development.
- Use cases of SDN applications for improved network management and automation.
- Application of SDN in data centers, service provider networks, enterprise networks, and 5G networks, Enabling network slicing and dynamic resource allocation in 5G through SDN.
- Addressing security challenges in SDN environments, Scalability considerations in large-scale SDN deployments.
- Load balancing and traffic engineering using SDN.
- Exploration of open-source SDN projects and communities.
- SDN Open Source Technologies, Overview of controllers like OpenDaylight, ONOS, and Ryu.
- Using Mininet for emulating SDN networks for testing and development.
- Advancements and research areas in SDN.
- Role of artificial intelligence and machine learning in SDN.
- SDN applications in IoT and edge computing, SDN's potential in shaping the next-generation Internet architecture.

BOOKS RECOMMENDED

1. Paul Goransson and Chuck Black, "Software Defined Networks: A Comprehensive Approach", Morgan Kaufmann, Latest Edition.
2. Siamak Azodolmolky and Richardson Lima, "Software Defined Networking: Design and Deployment", CRC Press, Latest Edition.

Approval:

Board of Studies:

Resolution No. 2.2

Dated: 21-07-2023

Board of Faculty:
AS&RB
Academic Council:

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Resolution No.
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