Course Outline for CS 798-1: Network Softwarization: Principles and Foundations (Short title: Network Softwarization Foundations)

Part 1: Software-Defined Networking Principles and Design

- Introduction to SDN
- SDN Data, Control Planes, and APIs
- Network Virtualization

Part 2: Cloud Computing, Network Function Virtualization and Orchestration

- Introduction to Cloud Computing
- Programmable Networks
- Network Function Virtualization

Part 3: 5G and Internet of Things

- IoT, Smart Cities, and 5G Use Cases
- 5G Network Architecture
- 5G Fronthaul

Part 4: Sustainable Management of Clouds and Networks

- Data Analytics
- Energy efficient and sustainable management

Part 5: Optical WAN and Radio Access

- Optical Network Trends

Course Outline for CS 798-2: Network Softwarization: Technologies and Enablers (Short title: Network Softwarization Technologies)

Part 1: Software-Defined Networking and Network Monitoring:

- SDN data plane – Open vswitch and Mininet tutorial and lab
- SDN control plane – ONOS tutorial and lab
- Network Monitoring - Packet Capture & TShark

Part 2: Cloud Computing, Network Function Virtualization and Orchestration

- Cloud Computing – OpenStack tutorial and lab
- Programmable Networks – Introduction to SAVI
- Network Function Virtualization – Containers and Orchestration

Part 3: 5G and IoT

- IoT, Smart Cities, and 5G Use Cases – IoT applications lab

Part 4: 5G Monitoring and Network Security

- Monitoring 5G Networks using MCR
- 5G Threat Hunting

Part 5: Sustainable Management of Clouds and Networks

- Data Analytics – Cloud workload classification/prediction lab
- Energy efficient and sustainable management – Green ICT tutorial

Part 6: Beyond 5G and 6G Networks

- 6G Research Challenges