**CS 798:** **Network Softwarization**

(Short title: **Network Softwarization**)

**Objectives:**

This course is one of two companion courses on network softwarization offered simultaneously in the Winter 2020, the first course introduces concepts and principles of network softwarization while the second course (this one) focuses on hands on experience with softwarization technologies and enablers. The courses will be offered simultaneously in 4 Universities, namely University of Waterloo, University of Toronto, University Laval and Ecole des Technologies Superieures (ETS).

Students must successfully complete both courses in order to qualify for CREATE industry internships in the area of network softwarization.

**Schedule:**

Friday 10:00 PM – 12:50 PM

**Outline:**

Part 1: Software-Defined Networking

* SDN data plane – Open vswitch & Mininet tutorial and lab. (Week 1)
* SDN control plane – ONOS tutorial and lab. (Week 2)
* SDN network virtualization – FlowVisor & OVX tutorial and lab. (Week 3)

Part 2: Software-Defined Optical WAN and Radio Access

* 5G Fronthaul – capacity of various optical network solutions (Week 4)
* OFDM – flex grid and dynamic allocation of bandwidth (Week 5)
* Spatial Multiplexing – commutation of WDM/SDM (Week 6)

Part 3: Sustainable Management of Clouds and Networks

* Cloud Computing – OpenStack tutorial and lab. (Week 7)
* Data Analytics – Cloud workload classification/prediction lab. (Week 8)
* Energy efficient and sustainable management – Green ICT tutorial (Week 9)

Part 4: Network Function Virtualization and Orchestration

* Programmable Networks – Service orchestration & chaining lab. (Week 10)
* Network Function Virtualization – Federation tutorial and lab. (Week 11)
* IoT, Smart Cities, and 5G Use Cases – IoT applications lab. (Week 12)

**Grading scheme:**

* Class Participation: 10%
* Lab Exercises: 40%
* Course Project: 50%