

Network Routing and Switching

1. **Course number and name:** 020RCOES2 Network Routing and Switching
2. **Credits and contact hours:** 4 ECTS credits, 2x1:15 contact hours
3. **Instructor's or course coordinator's name:** Samer Lahoud
4. **Text book:**
 - a. **Other supplemental materials:**
Course handouts, Cisco CCNA online material, lab experiments

5. Specific course information

a. Catalog description:

Concepts of network switching – Hardware architecture of routers and switches – Virtual local area networks – Inter-VLAN routing and switching – High availability in local area networks – STP protocol – Dynamic internal routing – RIP protocol – OSPF protocol – IPv4 address depletion – Network address translation – Introduction to BGP routing – Routing and switching platforms – Network simulation and emulation – Semester 2 of CCNA Routing & Switching certification program.

b. Prerequisites: 020INRES1 Introduction to Data Networks

c. Required: Required for CCE students

6. Specific goals for the course

a. Specific outcomes of instruction:

- Identify the design challenges of local area networks and analyze their structure.
- Implement virtual local area networks and compare VLAN interconnection methods.
- Analyze LAN redundancy with STP protocol.
- Evaluate the security challenges in a LAN.
- Implement, test, and compare dynamic routing protocols.
- Compare internal and external routing.

b. KPI addressed by the course:

KPI	a2	b2	b3	c2	c3	e3	h1	j1	k1	k2	k3
Covered	x			x		x		x		x	x
Assessed	x	x	x	x	x	x	x	x	x	x	x
Give Feedback											

7. Topics and approximate lecture hours:

- Introduction to LAN switching (2 lectures)
- Activity on throughput and delay computation in networks (1 lecture)

- Switching and redundancy in networks (2 lectures)
- Concepts of the STP protocol (2 lectures)
- Group activity on STP (2 lectures)
- Concepts of VLAN (2 lectures)
- Inter-VLAN routing and switching (2 lectures)
- Group activity on VLAN (2 lectures)
- Introduction to dynamic routing (1 lecture)
- RIP routing protocol (2 lectures)
- OSPF routing protocol (2 lectures)
- Activity on dynamic routing (2 lectures)
- Internal and external routing (2 lectures)
- Activity on external routing (1 lecture)
- IPv4 address depletion and network address translation (2 lectures)
- Group activity on NAT mechanism (1 lecture)