Quality of Service in Networks

1. **Course number and name:** 020QOSES5 Quality of Service in Networks

2. **Credits and contact hours:** 4 ECTS credits, 2x1:15 contact hours

3. **Instructor's or course coordinator's name:** Samer Lahoud - Melhem El Helou

4. **Text book:**
   a. **Other supplemental materials:**
      Course handouts and tutorials, lab experiments

5. **Specific course information**
   a. **Catalog description:**
      Traffic control in networks – Congestion control – Traffic shaping – Traffic policing – Traffic engineering – Quality of experience – Performance metrics in networks: delay, jitter, and loss probability – IP traffic models and properties – Architectures for quality of service – DiffServ model – Multimedia transport – IP multicast – Quality of service deployment in local networks – Quality of service deployment in wireless local networks – Quality of service deployment in the Internet – Internet regulation – Network neutrality – Passive and active measurements in networks – Collaborative measurement of quality of service.

   b. **Prerequisites:** 020INRES1 Introduction to Data Networks

   c. **Required**: Elective for CCE students; required for CCE telecommunication networks option students

6. **Specific goals for the course**
   a. **Specific outcomes of instruction:**
      Analyze the traffic characteristics in networks and identify the performance criteria
      Compare the network architectures for quality of service and identify the traffic control mechanisms
      Analyze the deployment of quality of service in wired and wireless local networks
      Design and deploy a network architecture and protocols for quality of service
      Analyze the challenges of deploying quality of service in the Internet and explain the concept of network neutrality

   b. **KPI addressed by the course:**

KPI	a1	a2	b1	b2	b3	c1	c2	c3	e2	e3	f1	g2	i2	k1	k2	k3
Covered			x	x					x		x				x	x
Assessed	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x
Give Feedback																

7. Topics and approximate lecture hours:
Fairness and rate sharing in networks (2 lectures)
Traffic control mechanisms in networks (4 lectures)
Group activity on the TCP protocol (2 lectures)
DiffServ and IntServ architectures (3 lectures)
Quality of service vs quality of experience (1 lecture)
Activity on analyzing traffic properties in access and backbone networks (2 lectures)
Traffic models (2 lectures)
Multimedia transport protocols (2 lectures)
Quality of service mechanisms in wireless local networks (5 lectures)
End-to-end quality of service (1 lecture)
Quality of service monitoring (1 lecture)
Group activity on deploying quality of service (2 lectures)