Operator Networks Infrastructure

1. **Course number and name:** 020ROPES5 Operator Networks Infrastructure

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

3. **Instructor's or course coordinator's name:** Samer Lahoud – Alain Bassil

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

5. **Specific course information**
   a. **Catalog description:**
      Overview on operator networks architecture - Study of the operator networks architecture in Lebanon: access network, aggregation network, and backbone network - xDSL physical layer - xDSL devices (DSLAM, BRAS) - xDSL network layer (ATM transport, authentication) - Telephone access architecture - Evolutions in the public operator network in Lebanon – Concepts of virtual circuit switching - Evolution towards MPLS architecture - MPLS VPN services - Deployment of ADSL network platforms - Deployment of MPLS network platforms.

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

   c. **Required**: Elective for CCE students

6. **Specific goals for the course**
   a. **Specific outcomes of instruction:**
      - Identify architecture elements of an operator network
      - Analyze the challenges of deploying an operator network in Lebanon
      - Describe the delivery of telephony and xDSL services over an operator network
      - Recognize the evolutions of the public operator network in Lebanon
      - Analyze the technological evolution towards MPLS
      - Compare the techniques of implementing VPN services
      - Configure MPLS devices and troubleshoot associated mechanisms

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

KPI	b2	j1	k2	k3
Covered	x	x	x	x
Assessed	x		x	x
Give Feedback				

7. **Topics and approximate lecture hours:**
   - Overview on operator networks architecture: physical architecture and services (3 lectures)
   - Study of the operator networks architecture in Lebanon (3 lectures)
   - Telephone service on operators network (2 lectures)
   - xDSL service on operators network: xDSL physical layer, xDSL devices, and xDSL network layer (ATM transport, authentication) (4 lectures)
   - Deployment of ADSL network platforms (2 lectures)
   - Fixed-mobile convergence (2 lectures)
   - IP-Multimedia Subsystem (IMS) (1 lecture)
   - Migration towards full-IP (1 lecture)
   - Evolution towards MPLS architecture (4 lectures)
   - MPLS VPN Services (2 lectures)
   - Deployment of MPLS network platforms (4 lectures)