

Internet Ecosystem and Evolution

1. **Course number and name:** 020EEIES4 Internet Ecosystem and Evolution
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, lab experiments, white papers, magazine articles

5. Specific course information

a. Catalog description:

Internet governance – Autonomous system interconnection – Transit and peering agreements – Internet exchange points – Concepts of external routing – BGP routing protocol – BGP routing policies – Security of routing in the Internet – Utility and demand models – Pricing models in the Internet.

b. Prerequisites: 020INRES1 Introduction to Data Networks

c. Required: Elective for CCE students

6. Specific goals for the course

a. Specific outcomes of instruction:

- Analyze and compare the interconnection agreements for traffic exchange in the Internet.
- Identify the challenges of external routing in the Internet and examine the concepts of the BGP protocol.
- Assess the scalability challenges and the security risks of routing in the Internet.
- Apply the routing policies as BGP rules using a network simulator.
- Identify and criticize the pricing models for Internet traffic.

b. KPI addressed by the course:

KPI	a1	a2	b2	b3	c2	c3	e3	h1	i2	j1	k1	k2	k3
Covered		x			x		x	x		x		x	x
Assessed	x	x	x	x	x	x	x	x	x	x	x	x	x
Give Feedback													

7. Topics and approximate lecture hours:

- Internet governance and autonomous system interconnection (2 lectures)
- Group activity on autonomous system interconnection (1 lecture)
- Transit and peering agreements and Internet exchange points (2 lecturers)
- Group activity on the Internet ecosystem in Lebanon (2 lectures)

- Concepts of external routing (2 lectures)
- Concepts of BGP protocol and routing attributes (2 lectures)
- Group activity on public data of BGP routing (2 lectures)
- Routing policies with BGP (2 lectures)
- Lab activity on implementing routing policies with a network simulator (3 lectures)
- Scalability issues with BGP routing (2 lectures)
- Security issues with routing in the Internet (2 lectures)
- Demand and utility models (2 lectures)
- Pricing models in telecommunications (2 lectures)
- Group activity on pricing for Internet access (2 lectures)