

## Faculty of Applied Sciences



### ELEC2920 Communication networks

[30h+30h exercises] 5 credits

This course is taught in the 1st semester

**Teacher(s):** Benoît Macq  
**Language:** French  
**Level:** Second cycle

#### Aims

At the end of this course, the students will be able

- to understand several communication network architectures including those deployed for mobile network, IP Next Generation and ATM Networks,
- to carry out the dimensioning of the networks starting from concepts of traffic,
- to design networks which guarantee a quality of service, more precisely the quality of service of multimedia communications
- to conceive architectures ensuring the security of the communications

#### Main themes

Identical to the contents of the course

#### Content and teaching methods

The course describes initially the concepts of routed and switched networks and directly gives examples from the ATM networks, IP, ISDN (and Frame Relay). One describes then the local area networks and the methods of access to a physical media (MAC), with a particular accent on the Ethernet networks and an introduction to the industrial networks. The network architectures for mobile and wired networks are developed. The concepts of traffic for different types of sources and of function of utility and the related traffic management strategies are then studied. The security management of a network on the basis of use of cryptography and the security tools (Ipv6, PKI, Firewalls) is developed. The security policy of a network is also approached

The course includes three parts, namely part of oral talk supplemented by documents of e-learning, evaluated within the framework of an oral examination, part of laboratory based on the use of a network simulator evaluated on the basis of a technical report and a work on an advanced question of network architecture to be delivered in the form of a WEB document.

#### Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

References :

S. Keshav, An engineering approach to networking, Addison Wesley  
 G. Pujolle, Les Réseaux, Eyrolles  
 Could be given in English

#### Programmes in which this activity is taught

**FSA3DS**                    Diplôme d'études spécialisées en sciences appliquées

**Other credits in programs**

<b>ELEC22</b>	Deuxième année du programme conduisant au grade d'ingénieur civil électricien	(5 credits)
<b>ELEC23</b>	Troisième année du programme conduisant au grade d'ingénieur civil électricien	(5 credits)
<b>ELME23/E</b>	Troisième année du programme conduisant au grade d'ingénieur civil électro-mécanicien (énergie)	(5 credits)
<b>ELME23/M</b>	Troisième année du programme conduisant au grade d'ingénieur civil électro-mécanicien (mécatronique)	(5 credits)
<b>FSA3DS/TL</b>	Diplôme d'études spécialisées en sciences appliquées (télécommunications)	(5 credits)
<b>MECA23</b>	Troisième année du programme conduisant au grade d'ingénieur civil mécanicien	(5 credits)