

# 5G and beyond

ECTS  
3 crédits

Composante  
Sciences Fondamentales et Appliquées

## Présentation

### Objectifs

The aim of this module is to study 5G technologies and Network

architecture in order to optimize the following items to guarantee the

Quality of Services/Experience:

- Peak data rate (Gbit/s);
- User experienced data rate (Mbit/s);
- Spectrum efficiency (bit/Hz);
- Device mobility (km/h);
- Latency (ms);
- Connection density (number of connected/accessible objects per km<sup>2</sup>);
- Network's energy efficiency;
- Area traffic capacity (Mbit/s/m<sup>2</sup>).

### Heures d'enseignement

5G and beyond TD 30h

### Pré-requis nécessaires

Digital communication

### Programme détaillé

5G technologies: (Wireless channel concept) "millimetre" wave

frequencies, Massive MIMO, Full Duplex transmission, NOMA Multiplexing

(Non Orthogonal Multiple Access), New high spectral efficiency

modulation concepts

5G Network architecture skills: Software-defined networking (SDN) and

network functions virtualisation (NFV)