USEES6 - Next Generation IEEE 802.11 standards

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Code : USEES6

Unité spécifique de type cours

3 crédits

Responsabilité nationale : EPN05 - Informatique / Pedro BRACONNOT VELLOSO

Présentation

Prérequis

Basic knowledge of wireless communications, including radio-wave propagation, modulation/coding, MIMO, multiplexing, and multiple access techniques.

Objectifs pédagogiques

The purpose of this course is to bridge the gap between the widely adopted IEEE 802.11 variants and the recently developed or under development amendments, focusing on three major technical aspects, i.e., the Physical layer (PHY), the Medium Access Control (MAC) layer, and the new usage models and applications in the coming years.

Programme

Contenu

The course presents the fundamental characteristics of recently released and forthcoming new IEEE 802.11 standards. It starts with an introduction to the IEEE standardization procedure, followed by a review of the 802.11 MAC layer basics and a short description of current 802.11 amendments (PHY and MAC). Next, it focuses on the most significant new amendments, their features, and the corresponding use cases in future wireless communications.

Topics:

- Introduction to IEEE 802.11.
- IEEE 802.11 basics.
- IEEE 802.11be - Enhancements for Extremely High Throughput (Wi-Fi 7).
- IEEE 802.11bn - Ultra High Reliability (Wi-Fi 8).
- IEEE 802.11bd - Enhancements for Next Generation V2X.
- IEEE 802.11bb - Light Communications.
- IEEE 802.11bf - Enhancements for Wireless LAN Sensing.
- Future directions and conclusion.

Modalités de validation

- Contrôle continu
- Projet(s)
- Mémoire
- Examen final

Description des modalités de validation

Written exams, project/lab reports, and short in-class quizzes. A project assignment to perform after the STC execution will also be evaluated.

Bibliographie

Titre	Auteur(s)
Next Generation Wireless LANs (Second Edition)	Perahia and Stacey