

Wireless communication channels

Titulaire

Philippe DE DONCKER (Coordonnateur)

Mnémonique du cours

ELEC-H422

Crédits ECTS

4 crédits

Langue(s) d'enseignement

Anglais

Période du cours

Deuxième quadrimestre

Campus

Solbosch

Contenu du cours

Narrowband wireless communication channels - Spatial characterization - Time characterization - Wideband wireless communication channels - SISO channel models - MIMO channels

Objectifs (et/ou acquis d'apprentissages spécifiques)

The student will be able to understand in-depth physics of wireless channels and to build a wideband channel model

Pré-requis et co-requis

Cours pré-requis

ELEC-H401 | Modulation and coding | 5 crédits et ELEC-H415 | Communication channels | 5 crédits

Méthodes d'enseignement et activités d'apprentissages

Lectures, exercices, project

Contribution au profil d'enseignement

This teaching unit contributes to the following competences:

- > In-depth knowledge and understanding of exact sciences with the specificity of their application to engineering
- > In-depth knowledge and understanding of integrated structural design methods in the framework of a global design strategy

- > In-depth knowledge and understanding of the advanced methods and theories to schematize and model complex problems or processes
- > Reformulate complex engineering problems in order to solve them (simplifying assumptions, reducing complexity)
- > Conceive, plan and execute a research project, based on an analysis of its objectives, existing knowledge and the relevant literature, with attention to innovation and valorization in industry and society
- > Correctly report on research or design results in the form of a technical report or in the form of a scientific paper
- > Present and defend results in a scientifically sound way, using contemporary communication tools, for a national as well as for an international professional or lay audience
- > Collaborate in a (multidisciplinary) team
- > Work in an industrial environment with attention to safety, quality assurance, communication and reporting
- > Develop, plan, execute and manage engineering projects at the level of a starting professional
- > Think critically about and evaluate projects, systems and processes, particularly when based on incomplete, contradictory and/or redundant information
- > A creative, problem-solving, result-driven and evidence-based attitude, aiming at innovation and applicability in industry and society
- > A critical attitude towards one's own results and those of others
- > The flexibility and adaptability to work in an international and/or intercultural context
- > An attitude of life-long learning as needed for the future development of his/her career
- > Has an active knowledge of the theory and applications of electronics, information and communication technology, from component up to system level.
- > Has a profound knowledge of either (i) nano- and opto-electronics and embedded systems, (ii) information and communication technology systems or (iii) measuring, modelling and control.
- > Has a broad overview of the role of electronics, informatics and telecommunications in industry, business and society.
- > Is able to analyse, specify, design, implement, test and evaluate individual electronic devices, components and algorithms, for signal-processing, communication and complex systems.
- > Is able to model, simulate, measure and control electronic components and physical phenomena.

Support(s) de cours

Syllabus et Université virtuelle

Autres renseignements

Lieu(x) d'enseignement

Solbosch

Contact(s)

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Méthode(s) d'évaluation

Présentation orale et Rapport écrit

Langue(s) d'évaluation principale(s)

Anglais

Programmes

Programmes proposant ce cours à l'école polytechnique de Bruxelles

MA-IREL | **Master : ingénieur civil électricien** | finalité Spécialisée
électronique et technologies de l'information/bloc 2