ELEC2595 Power quality

[30h+7.5h exercises] 4 credits

This course is taught in the 1st semester

Teacher(s): Alain Robert
Language: French
Level: Second cycle

Aims

At the end of the course, students will be able to
- understand the physical phenomena which may downgrade the electrical supply quality
- determine the acceptable emission limits from a disturbing installation
- choose the relevant mitigation method for an installation which is too disturbing or too sensitive to disturbances

Main themes

Identical to the contents of the course

Content and teaching methods

Generally speaking, the aim is to know the origin and the consequences of the disturbing phenomena, as well as the remedies, either at the source or at the reception end. Quality indices have to be carefully defined. The problem is mainly situated at the interface between the electrical network and the customer installations or within the customer installations.
- voltage continuity related problems :
. long iterruptions (cause : incidents)
- voltage quality related probleml
. frequency deviations (causes : incidents, load variations)
. magnitude variations, such as voltage fluctuations, voltage dips, short interruptions (causes : fluctuating installations, incidents)
. wave distortions, such as (inter)harmonics (causes : distorting installations)
. three-phase system dissymmetry (causes : unbalanced installations).
N.B. The problematic is close to - and partially overlapping - Electromagnitic Compatibility (see course ELEC2631). Only conducted low-frequency phenomena (<9kHz) are considered here, which influence installations through the electricity supply.
Interactive course, based on a thorough professional experience in the domain.
A practical exercice is proposed at the end of each lesson, to be corrected at the next one.

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

Prerequisites :
Nihil
Assessment :
Oral examination during the session
Support :
Yearly updated syllabus

Other credits in programs

ELEC22	Deuxième année du programme conduisant au grade d'ingénieur civil électricien	(4 credits)
ELEC23	Troisième année du programme conduisant au grade d'ingénieur civil électricien	(4 credits)
ELME22/E	Deuxième année du programme conduisant au grade d'ingénieur civil électro-mécanicien (énergie)	(4 credits)
ELME23/E	Troisième année du programme conduisant au grade d'ingénieur civil électro-mécanicien (énergie)	(4 credits)
ELME23/M	Troisième année du programme conduisant au grade d'ingénieur civil électro-mécanicien (mécatronique)	(4 credits)