UCL   Faculté des sciences appliquées

FSA

ELEC2520	Réseaux d'énergie électrique

[30h+30h exercises] 5 credits

This course is taught in the 1st semester

Teacher(s):   Noël Janssens
Language: french
Level: 2nd cycle course

Aims

- To introduce the future engineer into the design, the computation and the exploitation of electric power systems,
- To give a basic training on the electric power systems in use in the industrial environment (large industry or SME), as well as in the generation, transmission and distribution companies, or designed in engineering consultancies.

Content and teaching methods

- Electricity as an energetic factor,
- Architecture of the power systems/ Voltage systems (AC-DC),
- Per unit system/ Symmetrical components, Clarke components,
- Modelling : three-phase transformers, transmission systems (overhead lines, cables), generators (modelling in steady state, transient and subtransient, capability curve, excitation systems),
- Power flow in a meshed network. State estimator,
- Voltage control,
- Frequency and active power control,
- Tertiary control of the generation/ Management of a generation park,
- Introduction to planning of power grids,
- Unbalanced regimes and short-circuits,
- Protections

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

Teaching method :
- Interactive course, based on a thorough professional experience in the domain,
- Practical exercices proposed via Internet + training together
- Computer computations on power flows, voltage control and frequency control in a meshed network (two students teams).
Prerequisites :
Nihil
Assessment :
Report of the computer computations and related topics
Written (theory + exercice) and oral examination the same half-day

Other credits in programs

| **ELEC22** | Deuxième année du programme conduisant au grade d'ingénieur civil électricien | (5 credits) | |
| **ELME22/E** | Deuxième année du programme conduisant au grade d'ingénieur civil électro-mécanicien (énergie) | (5 credits) | Mandatory |