UCL
Université catholique de Louvain

LINGE1317
2013-2014

Research and technological development: energy, electronics and telecommunications

4.0 credits	32.5 h + 7.5 h	1q

Teacher(s) :	Macq Benoît ; Jeanmart Hervé (coordinator) ;
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	The course is divided into 2 parts. T he first part consists of an introduction to key concepts of thermodynamics, heat transfer and energy and address the problem of environmental issues. The second part is devoted to the study of electrical, technology, integrated circuits, and discusses the key concepts of electronic analog and digital as well as basic concepts and techniques to understand the telecommunications network architecture.
Aims :	The course aims to give students the technological base in the fields of energy and environment, electronics and telecommunications, to enable it to understand the specific language of science and collaborate and interact with specialists in these fields. The course also aims to make possible the implementation of a project in control. *The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".*
Content :	Energy and environment - Heat transfer - Fuels and combustion - First law of thermodynamics: U, H, Wm - second principle and entropy diagram (T, S) - Gas ideal thermodynamic transformations - phase change, thermodynamics vapors - Steam Cycles - Cycle Gas and TGV - Context energy renewables - Environmental Issues; phenomenology electronics and telecommunications - Electrical: the concept of current, voltage, energy and power - the main components (R, L, C, source Voltage) - Kirchhoff's laws, Ohm's Law - Calculation of DC and transient - Technology semiconductor principle of the pn junction (diode), operation of MOS transistor, manufacturing technology of an integrated circuit -- Analog electronics: study tours from operational amplifier - Electronic digital combinatorial circuits and sequential circuits - Propagation and modulation signal - Introduction to information theory and coding - Network Architectures - A study of TCP The teaching methods are exposed lectures. Course notes, copies of slides and possibly reading articles will be available to students. Additional references will be given authority by teachers.
Other infos :	Written exam

Cycle and year of study :	> Bachelor in Business Engineering > Bachelor in Information and Communication > Bachelor in Philosophy > Bachelor in Pharmacy > Bachelor in Economics and Management > Bachelor in Motor skills : General > Bachelor in Human and Social Sciences > Bachelor in Sociology and Anthropology > Bachelor in Political Sciences: General > Bachelor in History of Art and Archaeology : General > Bachelor in Mathematics > Bachelor in History > Bachelor in Biomedicine > Bachelor in Religious Studies
Faculty or entity in charge:	ESPO